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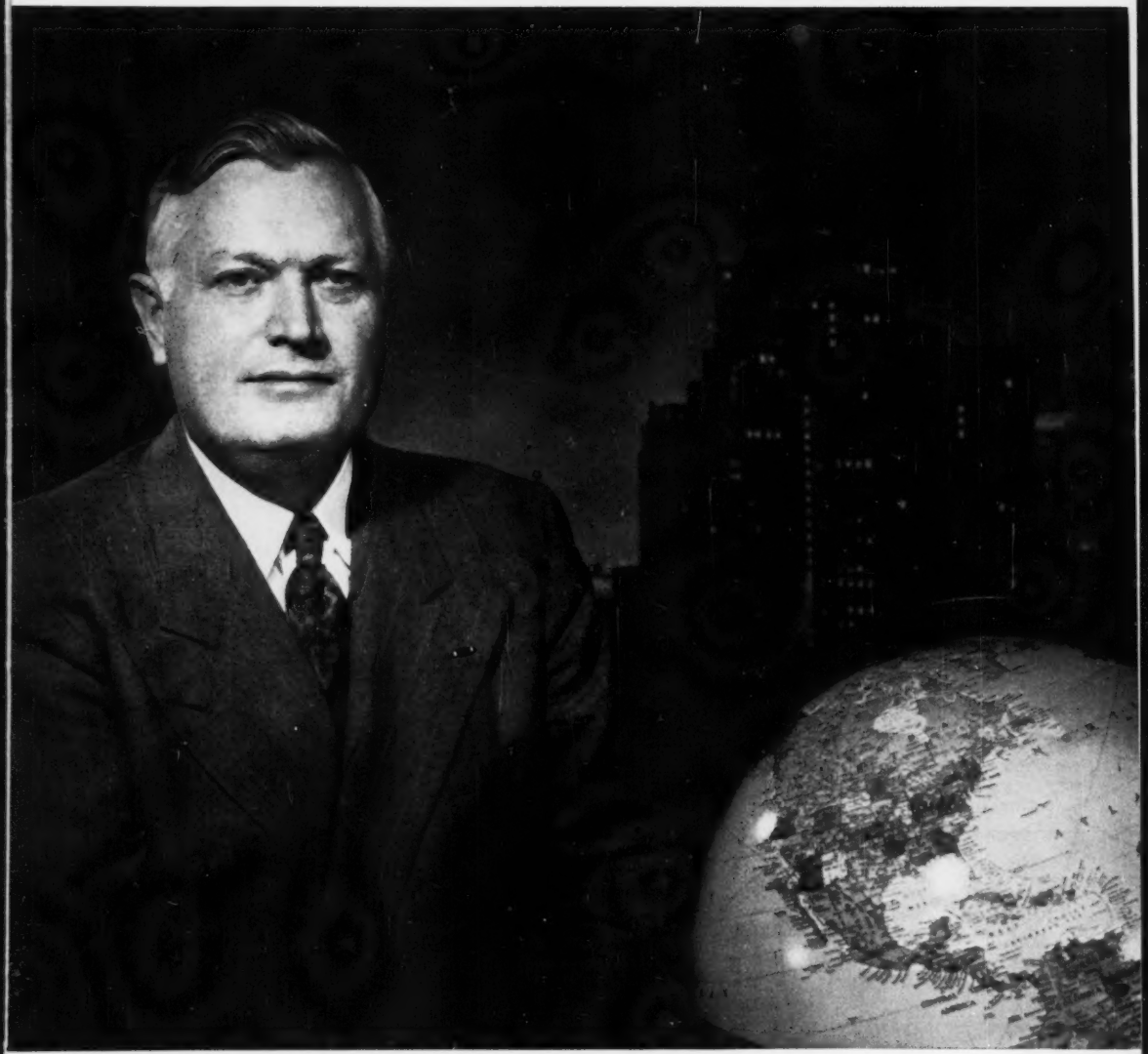
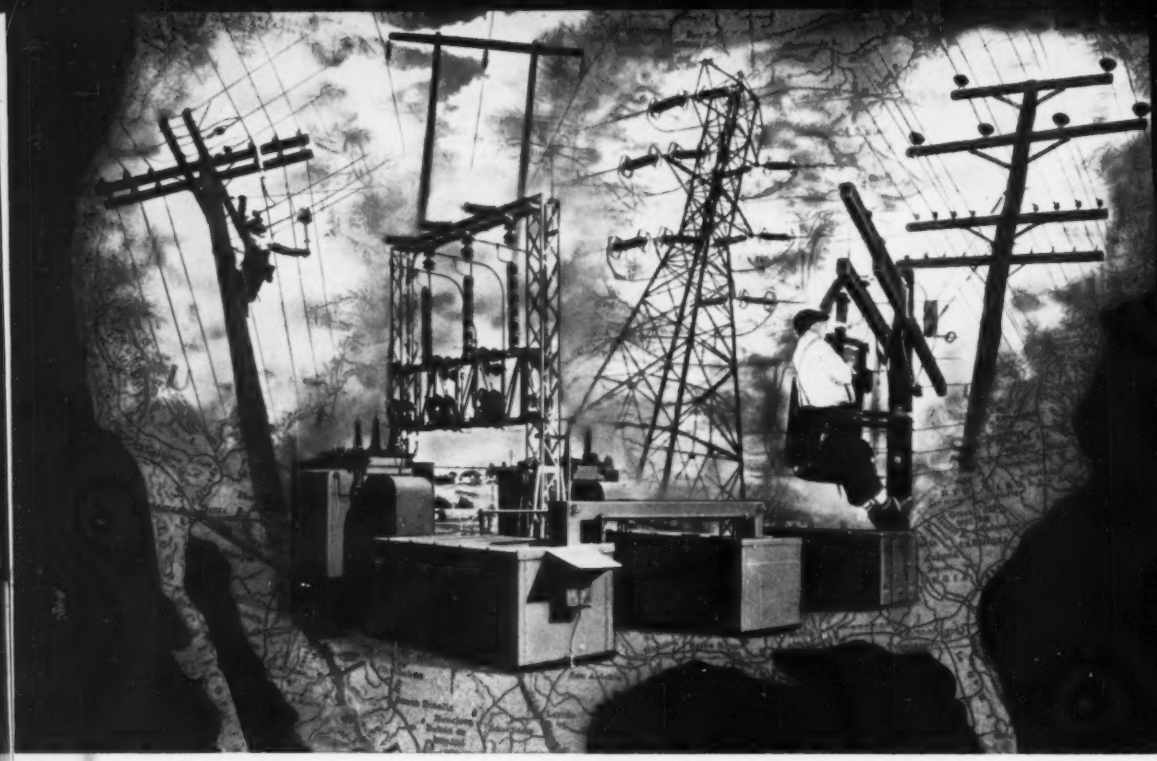


Walker L. Cisler, new president of Detroit Edison Co.

Flying Financiers' Plane Comes Down for Delta Plant Groundbreaking ..... Page 16

Housing Lets Down—For a While ..... Page 30



Too Many Dollars for Distribution?

Recent statistics show the need for shaving power delivery costs through long-range system planning

In each of the past three years, expenditures for distribution facilities have topped $1,000,000,000; and these costs in the last five years are equal to those of the preceding twenty years.

From figures like these, we can readily understand why many men in the electrical industry are taking a new look at distribution costs, and what to do about them. And the picture becomes even clearer when we note another cost comparison: over the past twenty-five years, $1.75 has been spent to get power to the consumer (transmission plus distribution) for every $1.00 that has been spent to manufacture the power.

That $1.75 for power delivery offers a fine opportunity for keeping costs down in the years ahead. Moreover, the opportunity becomes all the greater as distribution needs follow the present increases in generating capacity.

System planning group at The Detroit Edison Company is one of the best. Left to right, Stations Planning Engineer Brant, G-E Engineer Lucas, and Chief Planning Engineer Cole.

Recent board interconnections and modernization have made General Electric's network analyzers more valuable than ever in the study of distribution system problems.

WHAT'S THE ANSWER?

Many electric utilities are helping to solve the problem by setting up *long-range* system planning groups—men who are freed from day-to-day detail in order to do a farsighted job that will pay for itself many times over.

More of the answer is found through increased standardization—in sizes, voltage levels, and equipments—by which both equipment manufacturer and utility help to keep distribution dollars down.

Manufacturers like General Electric can continue to be of great assistance, too, through improved equipments, application engineering aid, and services like the network and differential analyzers.

If, through a better understanding of distribution system economics, 10 per cent has been saved in each of the last four years, this amounted to more than $100,000,000 per year. Tomorrow, we can do even better than that. General Electric Company, Schenectady 5, N. Y.

MORE POWER TO AMERICA

GENERAL ELECTRIC

501-171

The Electrical Week

INDUSTRY MOBILIZATION (p 14)—REA urges high priority for rural systems' needs . . . DPA grants two utilities certificates of necessity . . . Changes in Depa personnel are listed . . . DPA supplements first quarter CMP allotments . . . Aluminum production lags in Europe.

WASHINGTON—FPC grants Cowlitz license, but a court battle looms (p 5) . . . E. A. Sunstrom, TVA controller, resigns to take Paris post with Mutual Security Agency (p 19).

ELSEWHERE—Steam reheat is solidly established, sessions at ASME annual meeting indicate (p 4) . . . Walker L. Cisler succeeds James L. Parker as president of Detroit Edison Co (p 6) . . . NEMA study shows manufacturing industry must expand 18% by 1954 (p 11) . . . Housing down—for a while (p 30).

• • •

Washington—DPA's Morehouse Committee studying power supply and demand is hoping to finish its report around Dec. 15 . . . Depa is asking for more steel and aluminum but less copper for the second quarter of 1952 than for the first quarter . . . The idea of a long run shortage of copper, accepted as gospel up to now by mobilizers, has been challenged by copper producers. They told NPA shortage would become an oversupply within two years. They want the government to stop encouraging industries to substitute aluminum for copper . . . Aluminum supplies have gained only 5% compared to pre-Korea, but by the last quarter of next year should be 35% greater, NPA said. Most of the increased output will go to shops forging parts for airplanes . . . Vice chairman of FPC during 1952 will be Harrington Wimberly, Okla., succeeding Thomas C. Buchanan.

Bonneville Power Administration is considering laying a 230-kv submarine cable circuit across Puget Sound to serve Bremerton Naval Shipyard and Olympic peninsula. Total length would be 23,000 ft.

In a report submitted by Willard A. Lynch of W. C. Langley & Co, chairman of a committee to study public service securities, Investment Bankers Association of America was urged to campaign against further moves toward government-built electric plants "with the request that members of Congress be contacted and advised of the implications of the present program."

ECAP plans to enter television in January with 13 telecasts of the "Electric Theatre," a series of half-hour general drama films.

At a meeting attended by chief executives of Ebasco client companies at New York Dec. 3, Mississippi P&L received the Ebasco Gold Award for having an injury index 65.72% below the national average for the electric utility industry. Columbus & Southern Ohio Electric received the Silver Award for being 64.89% below.

The American Red Cross has adopted the Nielsen back pressure-arm lift resuscitation method in place of the Schafer prone-pressure method.

Detroit Edison Co has installed an automatic programmed load-frequency control system that permits simultaneous control of 29 generating units in system's four plants. Company plans to extend this to its new St. Clair power plant, bringing 32 units under simultaneous control.

By a 2-to-1 vote, New Hampshire PSC allows Public Service Co of New Hampshire an immediate temporary increase in rates of 5% to yield $703,736 annually compared with $979,504 and 7% surcharge requested.

Seeking to avoid a strike of CIO electrical workers in Westinghouse plants, federal mediators scheduled top level talks between the parties in Washington. In dispute are close-down of Bowling Green, Ky., lamp factory and seniority issues at Buffalo plant.

General Electric Supply Corp reorganizes, names four regional vice presidents, and establishes 11 new sales districts. Gesco will do business exceeding $500 million this year, 5½ times greater than its 1940 volume. Pres Charles R. Pritchard said "The market for electrical appliances, radios, television, and supplies of all kinds will be about 50% larger in 1954 than in the record year of 1950."

Congratulations—Dr Charles F. Wagner, Westinghouse Electric Corp, consulting engineer, will get the 1951 Edison Medal of AIEE for "distinguished contributions in the field of power system engineering" . . . Dan E. Karn, first vice president of Consumers Power Co, becomes president as Justin R. Whiting becomes board chairman . . . T. A. Busby, operating vice president of South Carolina E&G, will assume the duties of vice president and assistant to the president . . . Ralph H. Teed will become a vice president of Arkansas P&L on Jan. 1 . . . Texas Utilities Co. elects Richard Bullwinkle vice president . . . General Electric Supply elects four regional vice presidents: Charles T. Shropshire, Donald B. White, Robert A. Clark, and Harry C. Gerster.

5 Sessions at ASME Annual Meeting Indicate Reheat Is Solidly Established

Five consecutive sessions at the annual meeting of the American Society of Mechanical Engineers in Atlantic City, Nov. 26-30, were devoted to presentations that confirmed steam reheat as a fixture that will play its part in 60% of generation in the U. S. by the end of 1952.

Consensus was that the gain in performance more than pays for the added outlay; there is no sacrifice of reliability, flexibility, simplicity; nor is increase in manpower or maintenance entailed.

AG&E Experience Cited

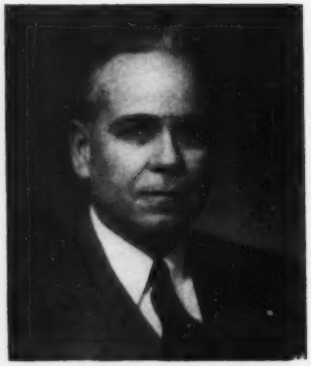
Reheat experience over 27 years on the American Gas & Electric Co system confirms the economy, reliability, and simplicity of the technique now that adequate controls have been devised. Gas recirculation is employed to assist in holding the steam temperatures necessary for operation over a range of load according to S. N. Fiala of that company.

Boston Edison Co also reported 27 years of favorable results. In fact, H. E. Stickle of that company said, reheat adds far less anxiety for the operating engineers than injection of untried gadgets into plant designs.

Additional Manpower Not Needed

At Dunkirk, N. Y., operation of reheat units since 1950 has, according to J. N. Ewart, Niagara Mohawk Power Corp, introduced no new limitation to flexibility nor additional manpower for operation.

Axial expansion of the turbine cylinder is used at Port Washington to guide the rate of turbine load pick up from cold start—usually 7½-15 hours to rated load, according to M. K. Drewry, Wisconsin Electric Power Co. Maintenance of reheaters has averaged only ½% of the annual coal saving credited to reheat. Total maintenance for four reheat units has been only 4.3% of fuel cost. The plant has suffered no impairment of reliability—otherwise the company would not have held exclusively to reheat since 1926, he added. Experience aggregating 25.7 unit-years shows 8.1% total outage (elapsed time) and 1.7% for forced outage.



GLENN B. WARREN, general manager of GE Turbine Divisions, received this year's ASME medal for work in turbine design

Reheat boilers are no harder to start from cold state than a non-reheat unit, according to P. R. Loughin and H. H. Poor of Babcock & Wilcox Co. The reheater, they said, is merely an additional superheater that needs to be drained and protected from overheating during start-up. If undrainable, it should be boiled out. The authors prescribed specific instructions for shutdown (scheduled and emergency) and emergency loss of electrical load.

Differential firing and multiple-furnace units were cited by H. R. Hemenway, Foster-Wheeler Corp, as a means of controlling steam temperature. Also control range can extend from 30% to 100% by means of a combination of radiant and convection superheaters.

W. J. Vogel and E. M. Powell, Combustion Engineering-Superheater, Inc, pointed out that for minimized quantity of desuperheating water the opposite temperature change tendencies of primary and resuperheaters must be reckoned with. In the discussion, ample range of control of superheat and reheat temperatures was cited by Fiala as the prerequisite of quick starting. J. F. Faulkner said Consolidated Edison Co in the last five years has made nearly 6,000 quick starts (15 to 20 min) after overnight shut down without difficulty.

Performance of 15 General Electric Co reheat turbines placed in service during the last two years has been "outstandingly successful" despite minor difficulties, according to C. Schabtach and R. Sheppard of that company. They said orders for shipment of 20 Mw and larger units in 1952 and 1953 are 60% and 72%, respectively, for reheat. Speed control is so good, they added, that loads of 100 Mw were dumped three times on one of the Dunkirk (N. Y.) units and speed rose only to 106.5% with only 2 Mw of auxiliary load carried. Experience indicates no-load operation with desuperheating sprays results in no overheat of exhaust blading.

Sticking of Valve Stems

Among the minor troubles with several reheat units has been sticking of stems of stop and control valves. Cause is attributed to black iron oxide and pipe scale. Behavior generally, however, has been so satisfactory that larger units for still higher pressures and temperatures are being undertaken confidently, they added.

Westinghouse Electric Corp, said R. L. Reynolds, is building no turbines of 50 Mw or below for reheat, but all of 140 Mw or more are reheat. The 185 Mw reheat unit for Burlington (N. J.) Station of Public Service Electric & Gas Co will have 2,350 psig inlet steam 1100/1050 F reheat with triple-exhaust employing 25-inch low pressure blades, the first that long on 3,600 rpm.

Discuss Long-Range Planning

Long-range planning of the well-knit AG&E system toward estimated loads of 15 million kw and 90 billion kwhr annually in 1970 was the theme of three symposium papers by Philip Sporn, H. A. Kammer and Fiala.

They justified the adoption of 2000 psi 1050/1050 F in 200 Mw sizes for their Kanawha and Muskingum River plants on the basis of assured fuel, system growth, industrial take and probable price trends.

Glenn B. Warren, GE, emphasized the thoroughness of the planning analysis and said 400 or even 500 Mw units could be built in cross-compound pattern.

The status of the cyclone type of external combustor, also considered at the ASME meeting, will be treated separately in a subsequent issue of Electrical World.

Legal Battle on Cowlitz Dams Seen Despite FPC Licensing of Project

The City of Tacoma has been granted a 50-year license by the Federal Power Commission to build a $142-million, 345-Mw hydroelectric project on the Cowlitz River, but it still faces a legal battle before it can begin construction.

Washington's Gov Arthur B. Langlie has declared that the state is obliged to begin a court test against the FPC license since the state legislature in 1949 passed a law to preserve the Cowlitz as a fish sanctuary. The act prohibits the construction of dams more than 25 ft on the Cowlitz and other downstream tributaries of the Columbia.

Tacoma, however, always has contended that the 1949 law is illegal since the Cowlitz is a navigable stream and therefore comes under federal jurisdiction. Langlie believes the question of FPC jurisdiction probably involves whether or not the Cowlitz is an interstate river.

The project also faces opposition from the Washington State Sportsmen's Council which has announced its intention of continuing the fight "clear to the U. S. Supreme Court."

Meanwhile, C. A. Erdahl, Tacoma commissioner of public utilities, expressed hope that the first generators on the two-dam project would be in use by the fall of 1953 "if all plans go well." One dam, to be built near Mossyrock, will have three 75,000-kw units with provision for a fourth unit of the same size. The second, at Mayfield, will have three 40,000-kw units with provision for a fourth unit.

In granting the license to Tacoma, FPC required that the city make further tests and experiments with fish handling facilities and protective devices and obtain commission approval before constructing any of them.

The need for electric power for defense purposes seemed to be the compelling reason for the granting of the license.

"The question posed does not appear to us to be between all power and no fish but rather between large power benefits (needed particularly for defense purposes), important flood control benefits and navigation benefits, with incidental recreation and intangible benefits balanced against some fish losses," the commission stated.

Defense Mobilizer Charles E. Wilson called on the commission several weeks ago to grant licenses on the Cowlitz project as well as the proposed 118,000-kw Pelton project on the Deschutes River in Oregon. FPC's action on the Cowlitz license put the Pelton project in a better position to be licensed.

$300 SCHOLARSHIPS went to six national winners of 1951 Westinghouse 4-H Club contest. Westinghouse VP J. M. McKibben, center, presents awards to: Byron D. Reida, 17, left, Zenda, Kan.; Kenneth Driskell, 16, Wilmer, Ala.; Jimmie Margaret Gilliam, 16, Asheville, N. C.; Geneva R. Loving, 18, Gotebo, Okla.; Arden E. Olsen, 17, Kalispell, Mont.; and Russell M. Henderson, 17, Tye River, Va.

Westinghouse 4-H Contest Winners Get Scholarships

Electricity is an integral part of agriculture just as good fertilization, good pastures or soil conservation, L. L. Koontz, Appalachian Electric Power Co, told the first Power Supplier Conference on the 4-H Farm and Home Electric Program held in Chicago Nov. 28.

The conference was sponsored by Westinghouse Electric Corp in conjunction with the program for state and national winners in the company's 4-H Club scholarship awards contest.

Koontz said his company's philosophy is that if rural youth is to meet the competition of tomorrow, the power suppliers have a moral obligation to teach them the part of farm electrification in their program.

Electrification can completely release the farmer from the grinding drudgeries of the past and the natural desire of young farmers to escape that drudgery is a powerful force that needs only to be released, C. E. Kohlhepp, president, Wisconsin Public Service Corp, told the conference.

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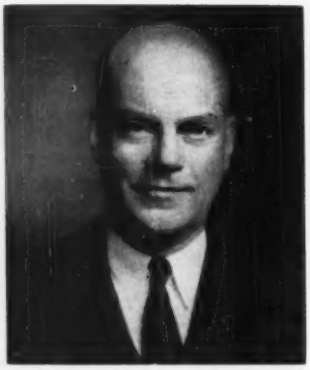
Walker Cisler Succeeds Parker as President of Detroit Edison Co

(See Front Cover)

Walker L. Cisler has taken over as president of Detroit Edison Co. He succeeds James W. Parker who remains with the company as a consultant and director. Seldom, if ever before, has an electric utility replaced a president so well known in the industry with another of equal prominence.

Cisler gained his prominence by his work with the Office of War Utilities during World War II and as chairman of Edison Electric Institute's electric power survey committee in the postwar period. Parker as head of the steering committee of the Electric Companies Public Information Program has been the evangelist of the industry.



JAMES W. PARKER

Cisler Served with OWU

The new president was an assistant chief engineer in the Electrical Department of Public Service Electric & Gas Co. Newark, in 1941 when he went to Washington. He had been with that company since 1922 holding many engineering jobs. In Washington he went with an agency that became the Office of War Utilities.

The power supply situation at that time was chaotic. Utilities, industrials, and the armed services were competing for electrical equipment. No one including the manufacturers knew how much of this equipment could be produced. The nation was threatened by a power shortage simply because of the failure of all parties to coordinate their plans.

Got Equipment on Time

Cisler introduced a realistic scheduling plan for manufacturers which got the equipment to where it was needed on time.

In 1943 with everything running smoothly at OWU, he prepared to return to his former position. Instead Detroit Edison asked him to become chief engineer of power plants. He took the job but immediately got a leave of absence to join the Army.

As colonel he went to the Mediterranean Theatre to recommend means for putting damaged electric power systems into operation. When this job was over, he was drafted by General Eisenhower to aid on utility problems arising from the European invasion.

It was Cisler who set up the comprehensive program for restoring electric service literally on the heels of the advancing Allied forces. One of his great triumphs was the restoration of power service to Paris within a few weeks after the Allied troops had recaptured the city. This was accomplished by repairing a transmission line which brought power from hydro plants in the south of France.

After the war he served on the Public Utilities Panel that was one of the early steps in the present Marshall Plan electric power program. Returning to the United States late in 1945, he was soon active in Detroit Edison's postwar expansion. He took over the responsibility for employee relations.

In 1948 he was made executive vice president, the position which he held until his recent promotion.

James W. Parker, like Cisler made his reputation first as an engineer. Both incidently were educated at Cornell. After his election as president in 1944 Parker devoted much of his time to being an evangelist for the industry.

Detroit Edison's territory is far from the battlegrounds where public and private power forces are struggling to determine whether the bureaucrats or the people shall one day control our industry. But because he believes that the public informed of the government planners' moves to socialize the industry will ally themselves with it, Parker led the movement which in 1949 resulted in the organization of the Electric Companies Public Information Program.

As chairman of PIP's steering committee the Detroit executive travelled thousands of miles and spent hundreds of hours making speeches and conferring with industry leaders. Now 76 companies are united in telling the story of the great accomplishments of the free enterprise system.

Has Many Industry Activities

But PIP has been only one of his industry activities. He is a director of Edison Electric Institute and on the financial committee of the Electric Companies Advertising Program. He is also a past president of the Association of Edison Illuminating Companies.

In 1947 when David Lilienthal, chairman of the Atomic Energy Commission, was looking for a chairman of AEC's industrial advisory group, he found him in the Detroit Edison president. It was this group which in 1948 recommended strongly that industry be given more responsibility in the development of atomic energy application and that wherever possible industry should assume some of the expense being carried almost entirely by the government. Parker supported this stand some months ago when Detroit Edison and Dow Chemical formed one of four groups asked to study and report on the possibility of developing electric power from atomic energy.

Parker Reorganized German Utilities

In 1949 he headed a group of American utility experts who investigated the German utility system and recommended its reorganization along American lines.

Parker devoted all of his earlier years with the company to engineering activities. He was actually the first young technical engineer put to work in the company's power plants as an apprentice under the direction of the experience-educated men of the operating crews. His advancement was steady and his training most complete. After holding many subordinate positions, he became chief engineer in 1924, vice president and chief engineer in 1935, director in 1940, general manager in 1943, and president in 1944.

this 225 kvar automatic

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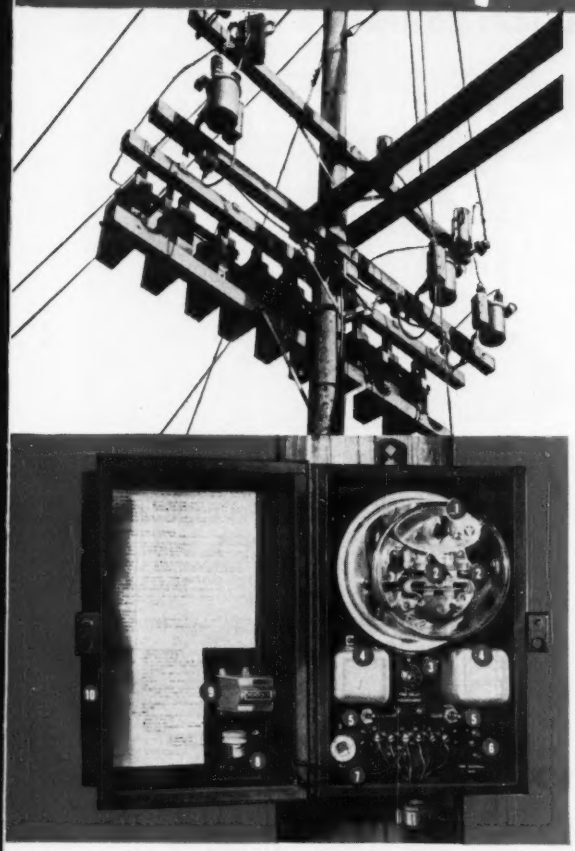

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L-M's new voltage-sensitive control has been field-tested for more than two years, and is now in full production. Although fundamentally designed for controlling the Kyle type GR oil switch, its flexibility permits its use with other solenoid or motor-driven equipment, including large breakers.

Heart of the control is basically a watt-hour meter modified to make it volt-sensitive. Over ¾" contact travel per volt (120 volt base) assures extremely sensitive operation. Voltmeter is temperature compensated to ±1% accuracy from −30° F to 140° F. Line voltage can be determined within this accuracy without the use of external portable instruments. Once band width and midpoint settings are established, they are accurately maintained and need no periodic checking.

Voltmeter is mounted in a standard meter socket. Installation can be completed and tested before meter is installed, so that the test engineer doesn't need to be present until the line crew has finished its work.

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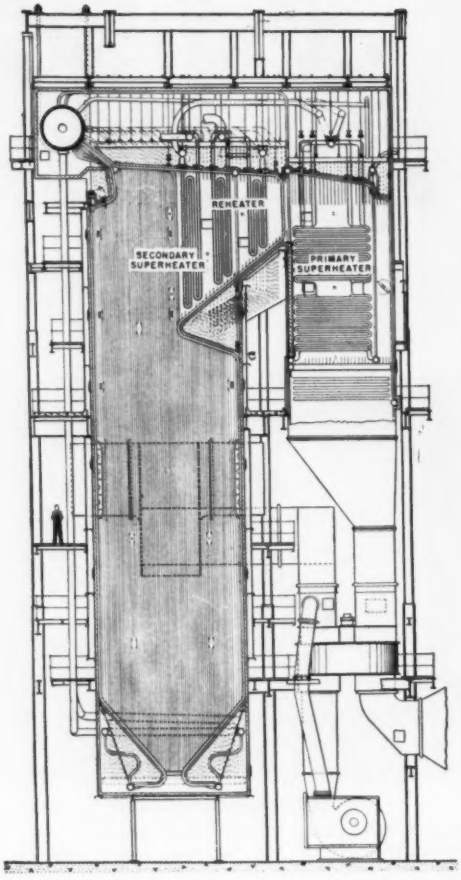
It is designed to serve a 75,000-kw turbine-generator operating at a throttle pressure of 1450 psi with a primary steam temperature of 1000 F. reheated to 1000 F.

The unit is of the radiant type with a reheater section located between the primary and secondary superheater surfaces. A finned tube economizer is located below the rear superheater section, and regenerative type air heaters follow the economizer surface.

The furnace is fully water cooled using closely spaced plain tubes. It is of the so called basket bottom type but the throat will be blanked off as long as oil is used as fuel.

C-E tilting, tangential burners will be used and the general furnace design will provide for the use of pulverized coal if and when desired. B-539



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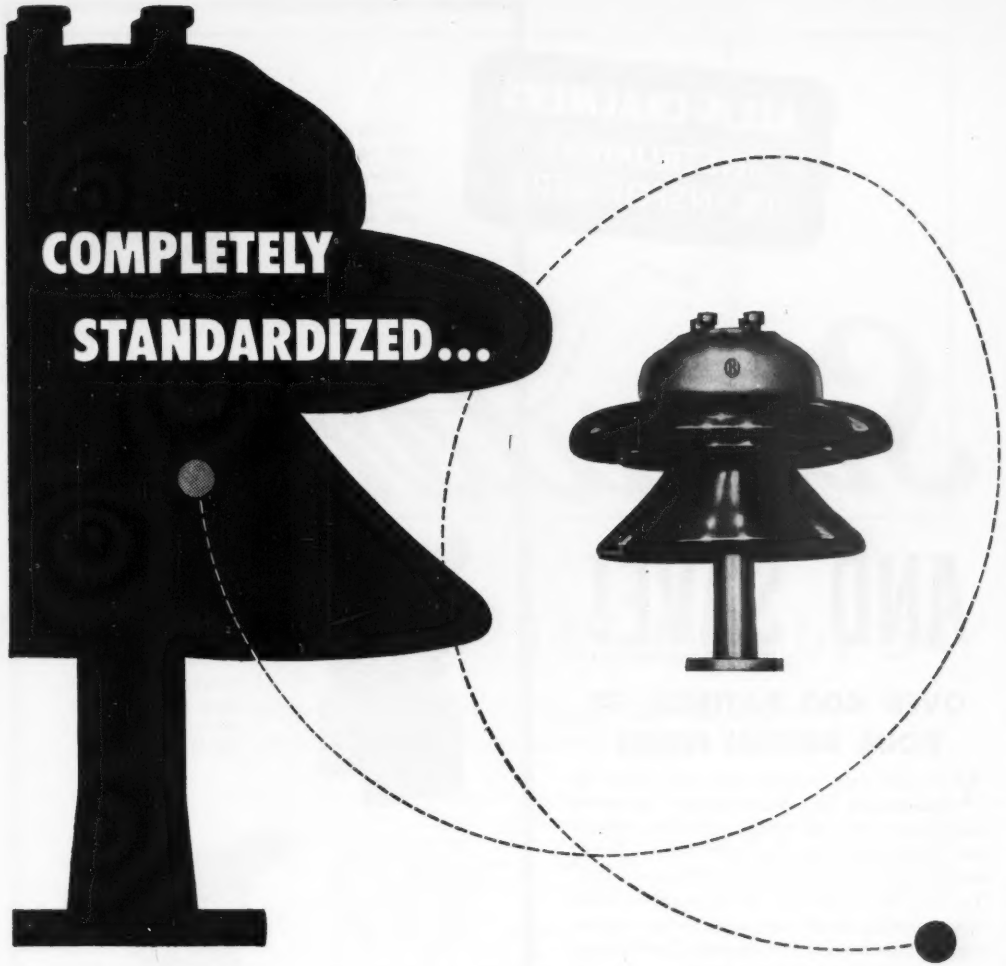

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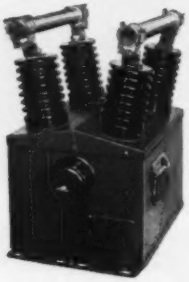

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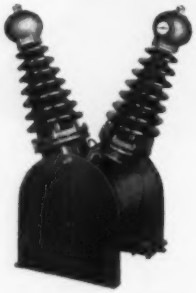
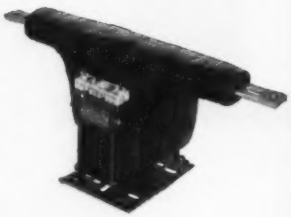


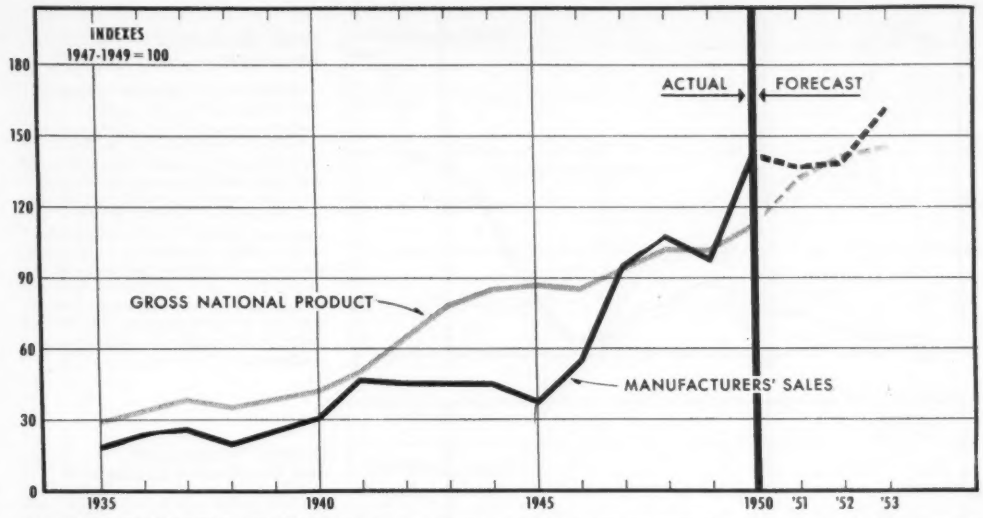
☆ Outdoor Potential, for heavy-duty metering service, Type SPW. Ratings up to 69 kv.

★ Indoor Current, for heavy-duty metering, Type K3E. Ratings up to 15 kv.



☆ Outdoor current, for accurate heavy-duty metering, Type KO. Ratings up to 15 kv, 10 to 800 amperes.

ALLIS-CHALMERS



MANUFACTURERS' SHIPMENTS of electrical equipment must rise 18% in next two years, according to NEMA's industry survey

Electrical Equipment: 18% More by '54

That's how much manufacturers will have to increase output if national production objectives are to be met, NEMA study shows

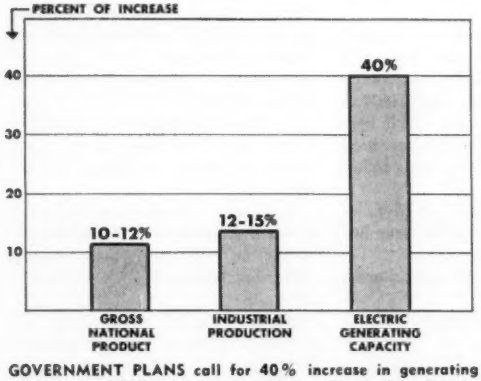
If the electrical industry does not increase its physical output about 18% in the next two years, national production objectives set by the government will have to be modified.

This was indicated in a study made recently by the National Electrical Manufacturers Association.

In other words, the study indicates production facilities of manufacturers will have to expand to provide for continued expansion of power-producing facilities, which in turn will make possible planned expansion of national production.

The chart above, reproduced from the study, shows that the trend of electrical industry shipments is generally comparable with that for gross national product, but there is some indication that the growth rate of electrical equipment may be somewhat greater than that for gross national product.

"The electrical manufacturing industry," said NEMA, "has become a significant part of the economy."

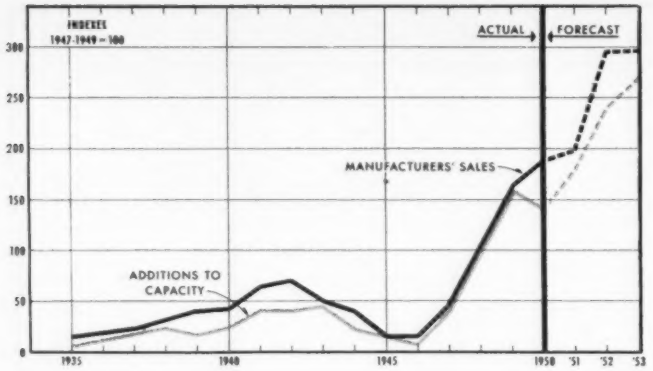


GOVERNMENT PLANS call for 40% increase in generating capacity by 1954, increasing need for electrical equipment

Gross National Product vs. Manufacturers' Sales of Electrical Machinery and Equipment (Billions of Dollars)

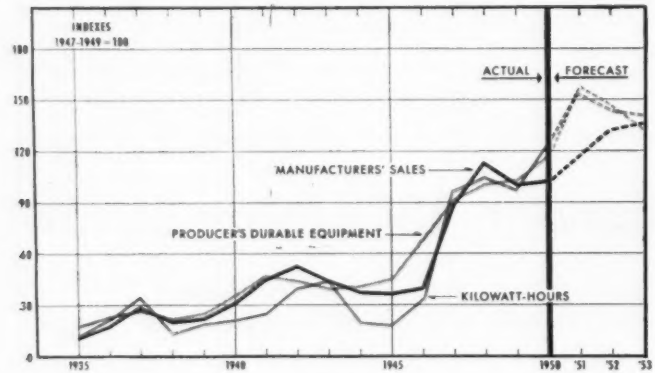
	Gross National Product	Elec. Mach. Industry	%
1939	$ 91.3	$ 1.9	2.04
1940	101.4	2.5	2.45
1941	126.4	3.8	2.98
1942	161.6	4.6	2.82
1943	194.3	5.7	2.95
1944	213.7	7.1	3.33
1945	215.2	6.3	2.94
1946	211.1	5.7	*2.68
1947	233.3	8.3	3.56
1948	259.0	9.0	3.48
1949	257.3	8.5	3.30
1950	282.6	11.5	4.05

* Extensive strikes throughout the industry.



Power Generation Equipment

Manufacturers' shipments are expected to increase 51% in the next two years, compared to an 18% increase in generating capacity over the span of World War II. During the war, high industrial output was attained by increasing the work force and hours worked per week. To a large extent, hand labor provided the extra margin of production. To avoid such a short-range solution, the objective in the period ahead is to mechanize and modernize industry for greater production. Demands of industry, the Atomic Energy Commission, and the military account for the high goals set for output of power generating equipment.



Outside Transmission and Distribution Equipment

Shipments of outside transmission and distribution equipment are expected to increase 15% from 1951 to 1953. Since these products serve a composite market, two indicators have been used for comparison:

1. Expenditure for producers' durable equipment (private and military) is representative of additions to capacity required to serve industrial and other heavy loads.

2. Annual increases in kilowatthour sales to other than large light and power users are representative of requirements for residential and other small users.

Trend of shipments compares with that of gross national product

NEMA presented a table (Page 11) showing that manufacturers' sale of electrical machinery and equipment had jumped from 2.04% of gross national product in 1939 to 4.05% in 1950. The figures, taken from the Department of Commerce "Industry Survey" reports, showed that during World War II, the industry's contribution to equipping war plants and turning out war materials increased its share of gross national product from 2% to 3% within two years. Postwar development brought the industry up to the 4% mark.

Today, the NEMA report said, those charged with overall strategy must direct national effort and allocate available materials for:

1. Building, equipping, and maintaining the military organization,

2. Adequate reserve stocks,

3. Economic and military support of allied countries,

4. Expansion of industry,

5. Maintenance of a healthy civilian economy.

"Conception of such a program," the report said, "is sound. Yet it presents a particularly difficult control problem during the approximately three-year period during which both a maximum in military preparedness and an expansion of supporting industry are needed."

The report said the objectives of government planning in the next two years were understood to be:

1. A 10% to 12% increase in gross national product,

2. A 12% to 15% increase in industrial production,

3. A 40% increase in electric generating capacity.

NEMA's survey attempted to determine the corresponding amounts of electrical equipment needed to realize these objectives. To do this, the association classified projects into six groups to analyze shipment trends and project future needs. Four of the six groupings are represented by charts on these pages:

1. Power Generation Equipment—Large steam and hydroelectric generating equipment and power conversion apparatus,

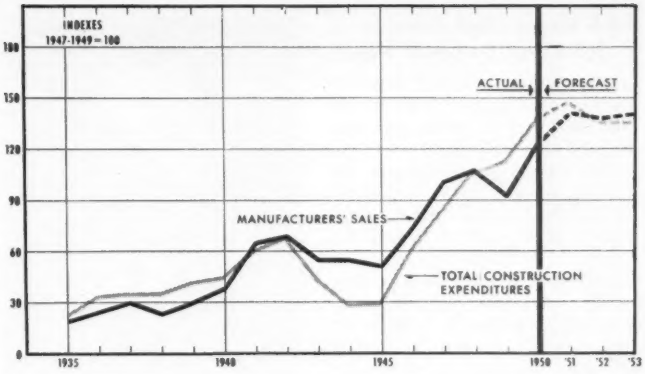
2. Outside Transmission and Distribution Equipment — Transformers, switchgear, measuring instruments, transmission wire and cable, and other apparatus used for carrying and controlling electric power from the generation plant to the ultimate consumer.

3. Industrial Electrical Equipment

Interior Distribution and Lighting Equipment

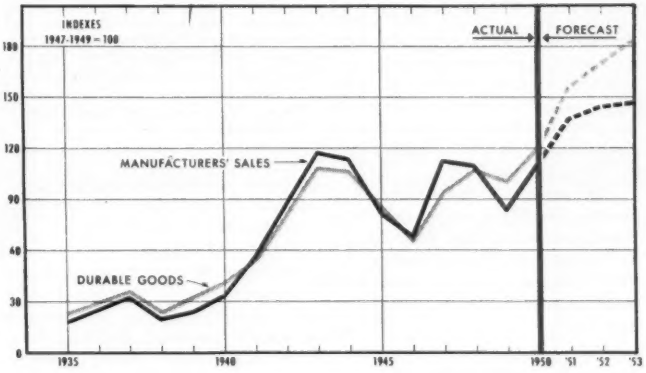
Although a 9% drop in total public and private construction is forecast for the next two years, manufacturers' shipments of this group are expected to remain about the same. This is because they include sales for maintenance and other uses not directly related to new construction.

The chart shows the trend of sales of a variety of electrical products associated with new construction, although much of the equipment is also used for replacement and modernization. Industrial equipment shipments do not fluctuate so widely as construction expenditures, but follow the same general trend.



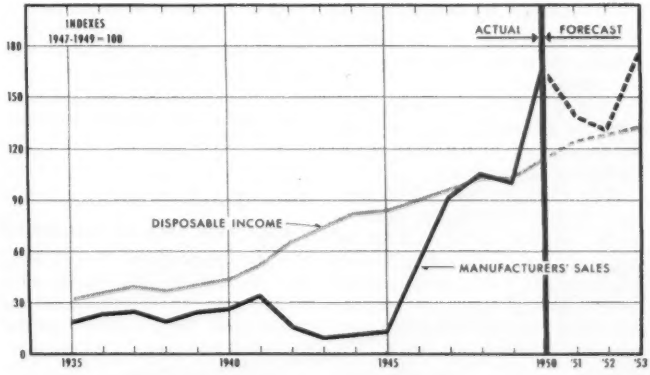
Industrial Electrical Apparatus

Shipments in 1953 are expected to be 8% above 1951 sales. This, NEMA observes, seems conservative when expected production of durable goods is considered. "If the goal of enlarging our output to the point where the economy can support the new level of defense spending is to be attained," the report says, "manufacturing facilities must be expanded promptly. Only the direct and product needs of the military services justify a higher priority. The more rapidly this part of the program can be realized, the sooner controls can be terminated."



Electrical Consumer Durable Goods

Although disposable income (income after all taxes) grew steadily during World War II, production of consumer durables was curtailed. Manufacturers' sales rose rapidly once wartime restrictions were removed. They peaked in 1950, because of the Korean war scare and the advent of television. The government has now taken steps to reduce the industry's output of consumer products, and this has been taken into account in projecting shipments. By 1953, NEMA feels, planned increases in production of the basic metals may permit the increases indicated.



—Motors and generators, industrial control, magnet wire, welding machines and electrodes, small turbines, etc.

4. Consumer Durable Goods — Electrical appliances, radio and television receivers, and other devices for use in the home.

For security reasons, military end products and components supplied by the electrical industry were omitted from the survey.

From its analysis, NEMA was able to predict rises in shipments during the next two years ranging from 8% for industrial apparatus to 51% for power generation equipment. NEMA then combined its projections for all groups of products surveyed, including about two-thirds of the output of the industry. When this was done the association found an 18% overall expansion was indicated by the end of 1953.

REA Urges High Priority for Rural Systems' Needs

A substantial amount of controlled materials must continue to go for rural electrification if the farmer is to meet his production goals.

This was the gist of a report prepared recently by the Rural Electrification Administration entitled, "Rural Electrification—A Vital Defense Resource."

To help farmers carry their share of the mobilization load, the report said, the rural electric systems will need "rather substantial amounts of aluminum and copper and smaller amounts of steel."

These systems must extend service to more farms and provide dependable service for those now electrified.

To accomplish these objectives, the report urged that rural electric systems be given the highest possible priority in obtaining controlled materials after military needs are met.

The report said there has been a tendency to classify electric service for the farmer as a luxury. "Yet the fact is," it continued, "electric service—far from being a luxury—is even more vital for farmers than for urban people."

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Depa Personnel Changes Listed by Washington

Recent changes in the Defense Electric Power Administration include the following:

Charles N. Metcalf, engineer, Consolidated Edison Co of New York, to be assistant to the chief of the power supply division.

Guy T. Shoemaker, retired president, Kansas City Power & Light Co, to be assistant to the chief of the major equipment scheduling branch.

George H. Tuttle, union relations adviser, Detroit Edison Co; Anthony F. Cramm, systems operation superintendent, Consumers Power Co; Richard M. Price, Duquesne Light Co; Victor E. Hulett, assistant to the vice president, Public Service Co of Oklahoma; Louis E. Davis, assistant superintendent of production, Virginia Electric & Power Co; Franklyn Dickinson, general superintendent of industrial development, Ohio Edison Co; all added to the expanded construction expediting branch.

John L. Winans, assistant superintendent of systems operations, Ohio Edison Co, and Harold F. Roempke, Indianapolis Power & Light Co, to be regional engineers.

Thomas M. Hotchkiss, chief mechanical engineer, Southern California Edison Co; Tom S. Birdsong, industrial engineer, Alabama Power Co; and Stanley Moyer, assistant mechanical engineer, Philadelphia Electric Co, have been assigned to the major projects control branch.

Dennis J. Murphy, Department of Water and Power, City of Los Angeles, is now serving as Depa's assistant representative in the Northwest with headquarters at Tacoma.

GEORGE A. GRIMM has replaced Mark Eldredge, resigned, as chief of the Utilities and Fuels Division of the Munitions Board. Grimm served with the War Production Board during most of World War II, later became a vice president of Florida Power Corp, and recently headed Tampa Ship Repair & Drydock Co

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DPA Grants 2 Utilities 3 Certificates of Necessity

Three certificates of necessity have been awarded to electric power companies by the Defense Production Administration. These certificates permit utilities to depreciate for tax purposes a designated percentage of the cost of new facilities in a five-year period. A large number of applications made by utilities are still to be processed by DPA (EW, Nov. 26, p 14).

Companies awarded certificates, amounts covered, and percentage of that amount allowed for rapid amortization are:

Public Service Co of Northern Illinois—$1,160,000 at 45%.

Minnesota Power & Light Co—Facility at Duluth, $3,955,000 at 35%; facility near Aurora, $13,703,000 at 55%.

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DPA Supplements 1st Q CMP Metal Allotments

Supplemental first quarter allotments of CMP metals have been made by the Defense Production Administration.

NPA's Electrical Equipment Division received 73 tons of steel and 3.5 million lb of copper wire mill products for quarter totals of 586,783 tons and 150,669,000 lb. Requests for more aluminum and brass mill products were denied.

As had been expected (EW, Oct. 29, p 14) Defense Electric Power Administration has been given 6 million lb of covered aluminum conductor for distribution to utilities in addition to regular allotments—1.5 million lb over the fourth quarter apportionment.

•

European Aluminum Lags

Western European governments have been urged by the Council of the Organization for European Economic Cooperation to provide increased supplies of electric power for the production of aluminum. OEEC said last year only 45% of aluminum production capacity was used because of power shortages. This year aluminum producers operated at 75% of capacity because abundant rainfall resulted in increased output at hydro plants.

DONALD R. McCLUNG, Pacific Power & Light Co vice president, has been appointed director of the Materials and Equipment Division of Depa

Merry Christmas
AND A
Happy New Year
TO ALL OF YOU...
FROM ALL OF US AT
LINE MATERIAL CO.
(A McGraw Electric Company Division)

NORTHERN investment bankers and financiers put down at Greenville, Miss., on air tour of industrial South sponsored by Middle South Utilities, Inc. From here they went to Cleveland, Miss., for groundbreaking of MP&L's new Delta Plant

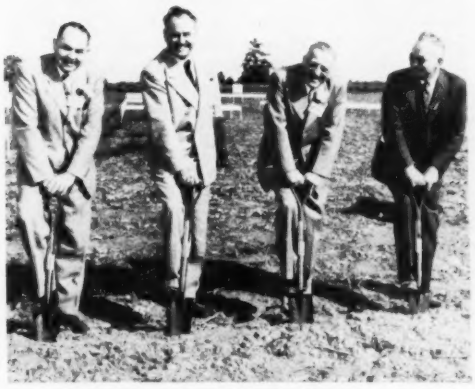
Flying Financiers' Plane Comes Down For Delta Plant Groundbreaking

DELTA CEREMONY'S KICKOFF . . .

MAJORETTES OF Cleveland (Miss.) High School Band set the groundbreaking show in motion with an exhibition of baton-twirling. Plant's linear dimensions were staked out (background) so company engineers could describe it to the guests

REX I. BROWN, president of MP&L, told the crowd: "This new station will play an important part in the future development of this great Mississippi Delta"

Investment bankers and financiers on a recent flying tour of the industrial South sponsored by Middle South Utilities dropped in on Mississippi Power & Light Co and stayed for the groundbreaking of the company's Delta Steam Plant. Edgar H. Dixon, president of Middle South and host on the aerial junket, joined Rex Brown, head of MP&L, in turning over the first spadeful of earth for the 210,000-kw installation at Cleveland, Miss. The Delta station, Brown told the gathering, will cost about $20 million and will be the largest electric generating plant ever built in the state. It is scheduled for completion by the end of 1953. After the MP&L show, the northern business men took off again for an airborne look at other Middle South properties.

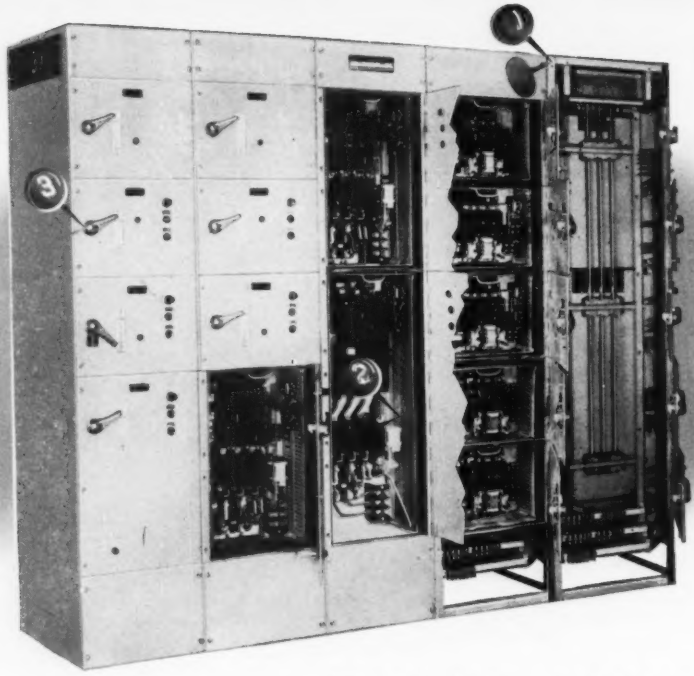


. . . led to groundbreaking . . .

PRES EDGAR DIXON, Middle South, joined Lt Gov Sam Lumpkin, Brown, and Delta Council Pres M. S. Knowlton in spadework

. . . and then to lunch

HOSTESS Dorothea Thweatt served coffee to Dixon at luncheon after groundbreaking. MP&L employees waited on 400 guests



Everybody says "WELL BUILT"

And they really mean it when referring to Westinghouse Control Centers. Here you get top-quality construction which gives you all the advantages of centralized motor control . . . quality at every one of the following points:

1. **Sturdy, Self-Supporting, Tight Structures.** No need for angle iron or other bracing. No gaps or cracks to permit entrance of foreign objects. Interior is fully protected.

2. **Complete Baffling** localizes unusual arcing if faults occur. A short circuit in one starter unit cannot spread throughout the entire structure. Removable grill baffle on right side of each unit provides easy accessibility.

3. **Safety Doors,** with safety-interlocking handles, remain on the panel when the starter unit is removed. Doors can be fastened closed over open space to prevent entrance by unauthorized personnel.

For further evidence of a "well-built" control center, check these features: self-cooling construction for foolproof ventilation, plug-in starter units, vertical and horizontal wiring troughs.

You get all these features and more, when you specify Westinghouse Control Centers. The complete story is contained in Booklet B-4213. For your copy, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-27009

DESIGN TESTED AND VERIFIED IN THE Westinghouse HIGH POWER LABORATORY

YOU CAN BE SURE.. IF IT'S Westinghouse

CONTROL CENTERS

Con Ed Is Unable to Bar Smoke Law Prosecution

Consolidated Edison Co of New York has lost its fight to prevent prosecution in Magistrates Court for violation of New York City's Smoke Control Law. Supreme Court Justice Ernest E. L. Hammer's recently dismissed the company's petition to bar prosecution.

The utility had challenged the lower court's jurisdiction after the issuance of a summons on information supplied by an inspector in New York City's Department of Housing and Buildings, which includes the Smoke Control Board. The summons charged that on Aug. 24 and several earlier occasions Con Ed had allowed dense smoke to be discharged from the smokestacks of its Hell Gate Plant.

Con Ed contended the Smoke Control Bureau was constituted as a regulatory tribunal with quasijudicial powers and had exclusive primary jurisdiction to hear and determine alleged violations of the city's administrative code. Therefore, the company argued, the issuance of the summons was contrary to the provisions of the code and to mandatory procedures governing the board's regulatory exercises of its functions. Justice Hammer, however, held that the primary powers conferred on the board did not bar it from taking court action against violators.

•

3 Named to Body Studying Illinois Public Utility Laws

Two lawyers and a professor of law have been appointed to Illinois' Public Utilities Laws Commission. The commission was created by the last General Assembly to study the operation and administration of the state's public utilities laws and the functioning of the Illinois Commerce Commission.

The appointees are Drennan J. Slater, Chicago attorney; Frank M. Pfeifer, Springfield lawyer; and Nathaniel Nathanson, professor of law at Northwestern University.

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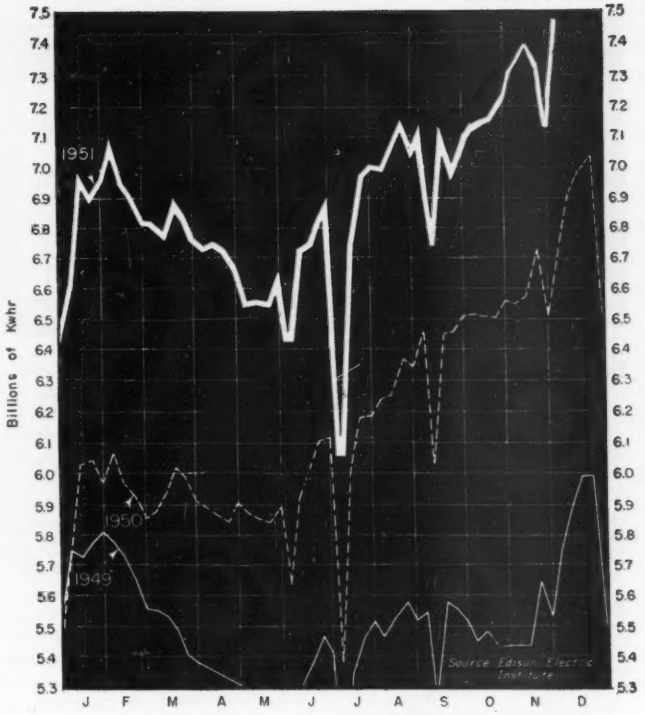
Sunstrom Quits TVA Post

E. A. Sunstrom, Tennessee Valley Authority controller for ten years, has resigned effective Dec. 16. He will go to Paris as deputy controller of the Mutual Security Agency. Gifford G. Cruze succeeds Sunstrom.



Output Week Ended Dec. 1—7,475,693,000 Kwhr

Weekly Output, Millions Kwhr

1951		1950		1949	
Dec	1 7,476	Dec	2 6,716	Dec	3 5,743
Nov	24 7,157	Nov	25 6,508	Nov	26 5,537
Nov	17 7,333	Nov	18 6,728	Nov	19 5,644
Nov	10 7,396	Nov	11 6,574	Nov	12 5,435
Nov	3 7,319	Nov	4 6,551	Nov	5 5,435
Oct	27 7,234	Oct	28 6,563	Oct	29 5,433
Oct	20 7,149	Oct	21 6,503	Oct	22 5,430
Oct	13 7,160	Oct	14 6,509	Oct	15 5,481
Oct	6 7,156	Oct	7 6,514	Oct	8 5,450
Sept	29 7,102	Sept	30 6,503	Oct	1 5,521

Per Cent Change from Previous Year

	Dec 1	Nov 24	Nov 17
New England	+ 5.8	+ 3.3	+ 0.2
Mid-Atlantic	+10.9	+ 9.0	+ 7.4
Central Industrial	+10.3	+ 6.3	+ 6.4
West Central	+10.3	+10.2	+11.1
Southeast	+ 9.7	+12.5	+12.1
South Central	+23.2	+19.9	+21.1
Rocky Mountain	+13.8	+11.8	+11.0
Pacific Coast	+12.1	+12.1	+ 8.5
Total United States	+11.3	+10.0	+ 9.0

MEETINGS

American Institute of Electrical Engineers
Computer Conference, Benjamin Franklin Hotel, Philadelphia, December 10-12; Winter General Meeting, Hotel Statler, New York, January 21-25, 1952.

Edison Electric Institute
Accident Prevention Committee, Hotel Roosevelt, New Orleans, January 7-8, 1952; Electrical Equipment Committee, Netherlands Plaza Hotel, Cincinnati, Ohio, February 11-12, 1952; Transmission-Distribution Committee, New Hotel Jefferson, St. Louis, February 14-15, 1952.

Instrument Society of America
1952 Regional Power Plant Instrumentation Conference, New York Section, Hotel Statler, New York, February 7-8, 1952.

★Missouri Valley Electric Association
Industrial-Commercial Sales Conference, Hotel President, Kansas City, Mo., February 7-8; Engineering Conference, Hotel President, Kansas City, Mo., April 2-4.

Public Information Program
East North Central Region Meeting, Fort Wayne Hotel, Columbus, Ohio, February 19, 1952.

Pennsylvania Electric Association
Winter Meeting, Relay Committee, Fort Stanwix Hotel, Johnstown, Pa., February 20-21, 1952; Prime Movers-Electrical Equipment Committees, Benjamin Franklin Hotel, Philadelphia, February 28-29, 1952.

American Society for Testing Materials
Spring Meeting-Committee Week, Hotel Statler Cleveland, March 3-7, 1952.

National Electrical Manufacturers Association
Section Meeting, Edgewater Beach Hotel, Chicago, March 10-13, 1952.

National Association of Corrosion Engineers
Annual Conference, Buccaneer Hotel, Galveston, Tex., March 10-14, 1952.

American Society of Mechanical Engineers
Spring Meeting, University of Washington, Seattle, March 24-26, 1952.

Oklahoma Utilities Association
Annual Convention, Biltmore Hotel, Oklahoma City, March 27-28, 1952.

★International Organization of Standardization
Triennial Meeting, Columbia University, New York, June 9-21, 1952.

★ Addition this week.

YIELDS (%)—Operating Electric Utility Securities

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1951									
Nov. 29	**2.99**	**3.07**	**3.17**	**4.28**	**4.49**	**4.80**	**5.45**	**6.18**	**6.89**
Nov. 21	2.99	3.07	3.17	4.25	4.48	4.78	5.44	6.19	6.93
END OF QTR.									
3rd 1951	2.87	2.91	3.04	4.05	4.27	4.61	5.52	6.24	7.05
2nd 1951	3.02	3.11	3.23	4.11	3.37	4.68	5.73	6.38	7.78
1st 1951	2.87	2.93	3.00	3.96	4.19	4.52	5.47	6.20	7.13
4th 1950	2.65	2.67	2.78	3.86	4.14	4.51	5.80	6.54	7.44

Data: Reis & Chandler, Inc.

Duke Power Rate Hearing Delayed Until Next Year

The chairman of the North Carolina Public Utilities Commission explained in some detail why the commission will not hear Duke Power Co's request for a rate increase until some time next year, possibly the latter part of January.

"We want," Chairman Stanley Winborne said, "to have the complete report of Duke's operations for the calendar year of 1951 so that we can contrast it with reports of other years of operation by the company."

The company filed petitions with the North Carolina PUC and South Carolina Public Service Commission for approval to increase rates by some $3 million annually. The South Carolina hearing will be held Dec. 18.

Winborne said he read "with interest" the company's advertisement in "The Charlotte Observer" on "why the price of electricity has to go up a little," but he had no comment other than to say he thinks Duke's proposal for residential rate increases "seems like a small one."

He estimated that half or more of the electric power sold by Duke goes to commercial and industrial customers in the heavily industrialized section it serves in the Carolinas.

Winborne commented at length on the fact that commercial and industrial customers of the company can "charge off" on their income tax returns whatever increases are made in their rates as such items of expense are deductible under law. But, he agreed, residential customers are, under the law, unable to do this. He would not comment on the possibility that the commission might take this under consideration when it takes up Duke's case.

FINANCIAL BRIEFS

Arizona Corporation Commission has granted Central Arizona Light & Power Co estimated $2-million rate increase annually . . . **New York Public Service Commission** will hold a hearing Dec. 18 on New York State Electric & Gas Corp's bid for $2.5 million annual rate increase . . . Sitting for first time as a power rate fixing body, **Florida Railroad & Public Utilities Commission** has halted its hearing on a Florida Power Corp petition to increase its rates in Pinellas County after the commission's general counsel, Lewis Petteway, challenged admissibility of the corporation's evidence. W. C. Gilman, president of Florida Power, told the commission his company should be allowed to earn at least 6½% on its investment. He said the increases asked for Pinellas County would not yield more than 5½%, but the directors decided to seek only that gain now and come back later if earnings were insufficient.

Coast Counties Gas & Electric Co has placed with institutions $3 million of 3½% first mortgage bonds due in 1981 . . . **Interstate Power Co** is planning to sell about $2 million in mortgage bonds and $3 million in common stock by April, 1952 . . . **Southern Utah Power Co** has asked Federal Power Commission approval to offer its stockholders 15,671 common shares on a 1-for-4 basis at $11.50 . . . **Montana Power Co** has asked FPC for authority to issue $2 million in 2.75% promissory notes, due July 1, 1954 . . . **Louisiana Power & Light Co** has received SEC approval to borrow up to $13 million as funds are required for its 1952 construction program totaling approximately $15 million.

Thurston County Public Utility District has become first district to say "yes" to the $96.8 million purchase proposal for seven Washington State PUD's to purchase the Puget Sound Power & Light Co facilities. The purchase plan is a group venture so each district's approval is subject to approval by all. Thurston's share comes to $18,413,000.

Electric Utility Financing

Company and Description	Amount of Offering (000)	Offering Price	Yield at Price to Public
WEEK OF NOVEMBER 29-DECEMBER 5			
Bonds			
Central Maine Power—1st and gen mtg 3⅛% 1981 new money	$ 7,000	101.749%	3.53%
Preferred Stock			
Northern Indiana Public Service—240,000 sh, $25 par 4.56% conv, into common sh-for-sh through Dec. 1, 1961, preference stock (to common holders on 1-for-12½ sh basis, record Nov. 9 to expire Dec. 3)	$ 6,000	$24.00	4.75%
Central Hudson Gas & Electric—40,000 sh, $100 par 5¼% new money	4,000	100.00	5.25
WEEK OF DECEMBER 6-12			
Bonds			
Virginia Electric & Power—1st and ref mtg 1981	$20,000	.....	.....
Long Island Lighting—1st mtg 1976	25,000	.....	.....
SCHEDULED DECEMBER-JANUARY			
Bonds			Bid Date
Niagara Mohawk Power—gen mtg 1981	$15,000		Dec. 18
Seattle, Wash.—municipal light and power rev, 1962-1986	28,000		Jan. 8
Indiana & Michigan Electric—1st mtg 1982	17,000		Jan. 22
Indiana & Michigan Electric—serial notes 1956-1967	6,000		Jan. 22
Preferred Stock			
Iowa Southern Utilities—100,000 sh cum $30 par conv pfd	$ 3,000		Dec. 19
Common Stock			
Central Maine Power—315,146 sh (being offered to 6% pfd holders on 5-for-7 basis and to common holders on 1-for-7 basis, record Dec. 5 to expire Dec. 17; New England PS, holder of 49% of common, waiving its right to subscribe for 150,740 shares of new common)	$ 5,554	$17.625	6.81%
Public Service Co of New Hampshire—235,809 sh, $10 par	.....	.....	Dec. 12
Niagara Mohawk Power—1 million sh	.....	.....	Dec. 18

IN THE INDUSTRY

FISCHER BLACK

When you put a few dollars in the till to provide for depreciation on your home, it makes you worth less. Does this make sense? Of course, it does not make sense. But nevertheless, an important committee among our industry regulators has made a proposal that comes near to this kind of thinking. The regulatory imposition of original cost rate bases and use of a net rate base in conjunction with straight-line depreciation are still major problems for electric utilities.

But now the industry is faced with a new suggestion which is similar to the proposition expressed above. The Committee on Statistics and Accounts of the National Association of Railroad and Utilities Commissioners has again proposed that the Reserve for Depreciation, which is a credit account, be included in the asset account of the balance sheet as a deduction from Utility Plant. In addition they have proposed that the charge for depreciation shall be computed in accordance with the straight-line method applied on a group plan, with no provision for use of any other method for calculating depreciation.

EEI Accounting Committee Fighting Suggestion

It is obvious on its face that such changes would make electric company asset figures even less realistic than they are today under present original cost accounting procedures. This and other criticism have been leveled at the NARUC committee report by a special subcommittee of the EEI and AGA Accounting Committees.

In the memorandum covering their objections to these proposals, the EEI and AGA subcommittee has stated flatly that the proposal is unsound and incorrect in principle. They contend that "when the depreciation reserve account balance is deducted from the plant account balance, the net figure does not and cannot reflect any significant business fact. It merely shows the result of mixing two accounts having unrelated content". It is also pointed out by the committee that "the proposal for the extension of the practice of deducting depreciation reserves from plant assets is particularly inappropriate at this time when serious criticism is being directed against the accounting convention for stating plant assets at cost."

But NARUC Believes It Would Aid Security Analyst

It seems that one basis for the suggestion is that this is an industrial accounting custom to deduct the reserve from plant assets. The NARUC committee believes that such an accounting method would simplify the work of the statistician and the security analyst and that no damaging consequences would result therefrom. On the other hand the EEI committee believes that the method used by industrialists "has resulted in the drawing of unwarranted conclusions as to the amounts of profit and percentages of profits relating to the total assets invested in the business."

Perhaps the Committee on Statistics and Accounts of the NARUC is out on a fishing expedition. We must assume that their objective is better accounting procedures and more just regulation. However, we believe they have been misguided and ill-advised. A gracious withdrawal of their proposals would seem to be in order. Certainly the prestige of the NARUC will suffer if such recommendations remain on the list of matters which are to be considered in the coming year.

[*Copies of the subcommittee's comments may be obtained from Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.*]

TECHNICAL NOTES

ARCHER E. KNOWLTON

Seams in fabric can be detected electronically with the fabric travelling as fast as 100 yards per minute.

Capacitors filled with synthetic liquid suffer a decrease in capacitance when de-energized for several hours in an ambient temperature lower than -15 C.

Sectionalizing stations are proportionately less necessary as the number of transmission circuits in parallel is increased.

Circumferential arrangement of the grain of oriented-grain strip steel for stator cores favors the larger loss in the outer portion of the core without prejudice to the tooth region.

Generator of 60 kw weighing only 3300 pounds is built of light metals and insulated with silicone.

Carrying charges represent by far the largest portion of the total cost of transmission measured in terms of mills per kwhr.

Eight large generators have been running satisfactorily at 22 kv for a good 20 years in this country.

Beryllium poisoning from fluorescent lamps is minimized by use of a device which chews up old-style burned-out tubes and flushes away the deleterious phosphor.

Fleece-lined synthetic rubber gloves are useful in dealing with temperatures as high as 310 F and as low as — 80 F.

Capacitors are relatively so inexpensive as to be in the expendable category, nevertheless their reputation for reliability hardly necessitates such consideration.

Corona losses and radio interference are likely to be of prime importance in deterring the adoption of extra-high voltage for transmission.

Smoke discharged from a tall chimney is fanned out horizontally and thereby diluted as it loops toward the ground and passes through strata of varying wind direction.

Restriction of ground-current flow by inept choice of method of grounding a generator neutral may preclude appropriate relay protection.

Interfacial tension test recognizes products of transformer oil oxidization not indicated by the neutralization test.

NEWS ABOUT PEOPLE

Lobban, Hurns Advanced by Detroit Edison Co

James H. Lobban, vice president and secretary of Detroit Edison Co, has been elected executive vice president of the company to succeed Walker L. Cisler, newly elected president and general manager.

The company also named Thomas E. Hurns, general accountant and assistant secretary, as secretary to replace Lobban.

J. H. LOBBAN

Lobban has been with the Edison company since 1911. He was made property engineer in 1913, assistant general accountant in 1918, assistant secretary in 1935, general accountant in 1944, secretary in 1945, and vice president in 1948.

Hurns joined the utility in 1910 and was made assistant secretary in 1937 and assistant general accountant in 1944. He assumed the duties of general accountant in 1948.

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George H. Sherrard has been appointed manager of the electrical textile sales division of Owens-Corning Fiberglas and general manager of its textile products division. For the past two years he has been manager of wire and cable sales. He joined the company in 1940.

Osborne Mitchell, secretary of the Brazilian Traction Light & Power Co, Ltd, has been appointed vice president of administration of COBAST, the management company of Brazilian Traction's operating subsidiaries in Brazil. For the past year he has been resident in Brazil as acting vice president of operations.

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GE Fills 3 Sales Posts at Fort Wayne Division

General Electric Co has made three appointments in the sales organization of its Specialty Transformer and Ballast Department. H. K. Pritchard has been named manager of general purpose transformer sales, J. P. Coughlin manager of aircraft and electronic transformer sales, and A. E. Rowe manager of light component sales.

Pritchard, who has been manager of Specialty Transformer Sales Division since 1947, entered the GE Test Course at Fort Wayne, Ind., in 1927. Later that year he joined the design engineering staff of the transformer engineering division and served as the division's representative at the company's Schenectady Works. He returned to Fort Wayne in 1934 as section engineer on radio transformers, and in 1940 entered sales work as a group leader in the specialty transformer section. In 1946 he was named manager of sales for general purpose components.

Coughlin, formerly assistant manager of the Specialty Transformer Sales Division, joined GE on the Test Course in 1941 and served as a design engineer for distribution transformers at the company's Pittsfield (Mass.) Works. Two years later he was transferred to the Specialty Transformer Division at Fort Wayne as an application engineer.

Rowe started with GE in 1946 as a sales engineer in the Specialty Transformer Division's lighting component section and three years later was made assistant manager of ballast sales. In his new position, he will be responsible for the sale of luminous tube transformers and ballasts for fluorescent and mercury vapor lamps.

South Carolina E&G Co Advances Costello, Petit

South Carolina Electric & Gas Co has appointed J. M. Costello executive vice president. The former financial vice president succeeds E. L. Godshalk who resigned to become vice president in charge of operations for Kansas City (Mo.) Power & Light Co (EW, Dec. 3, p 168).

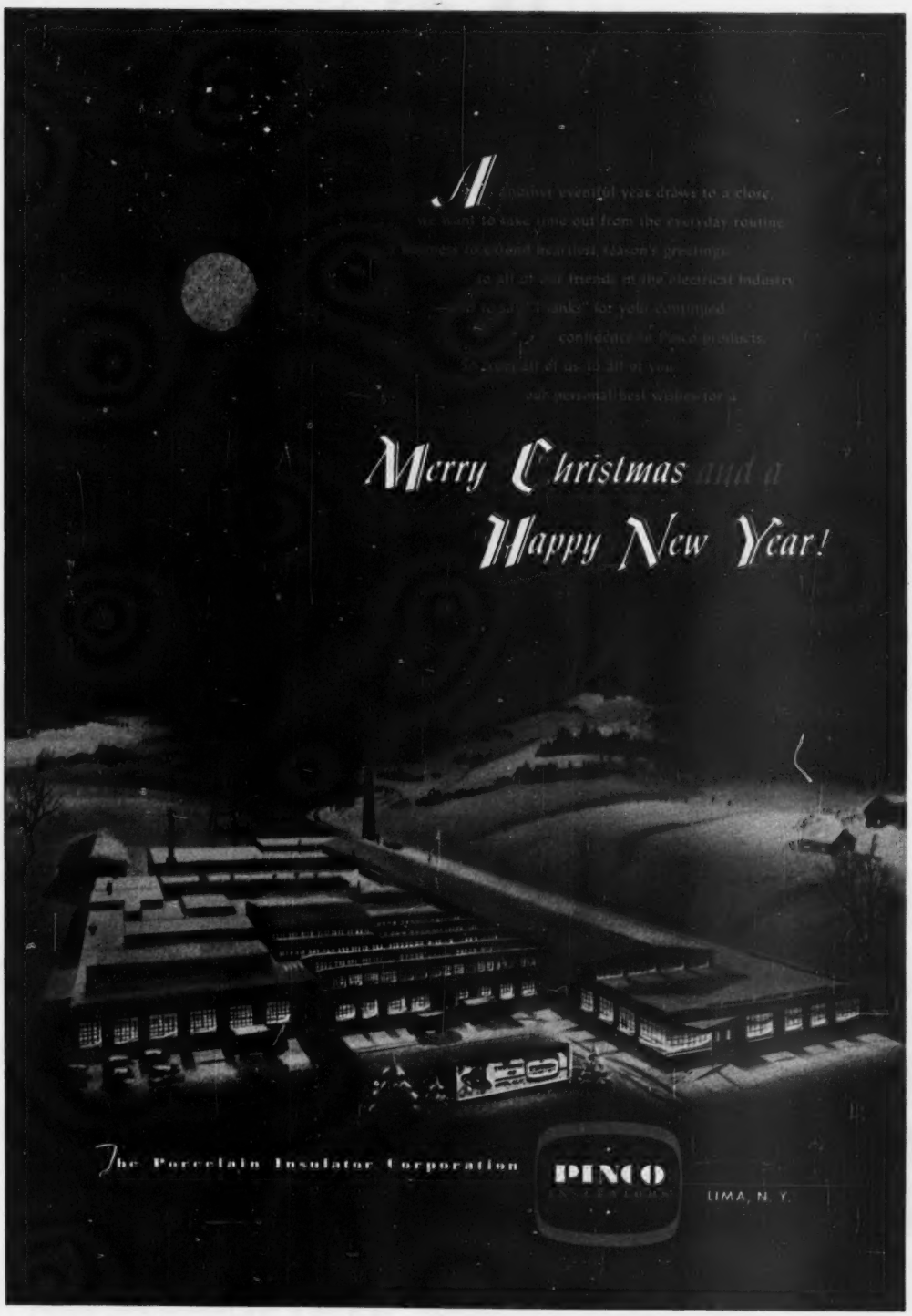
J. M. COSTELLO

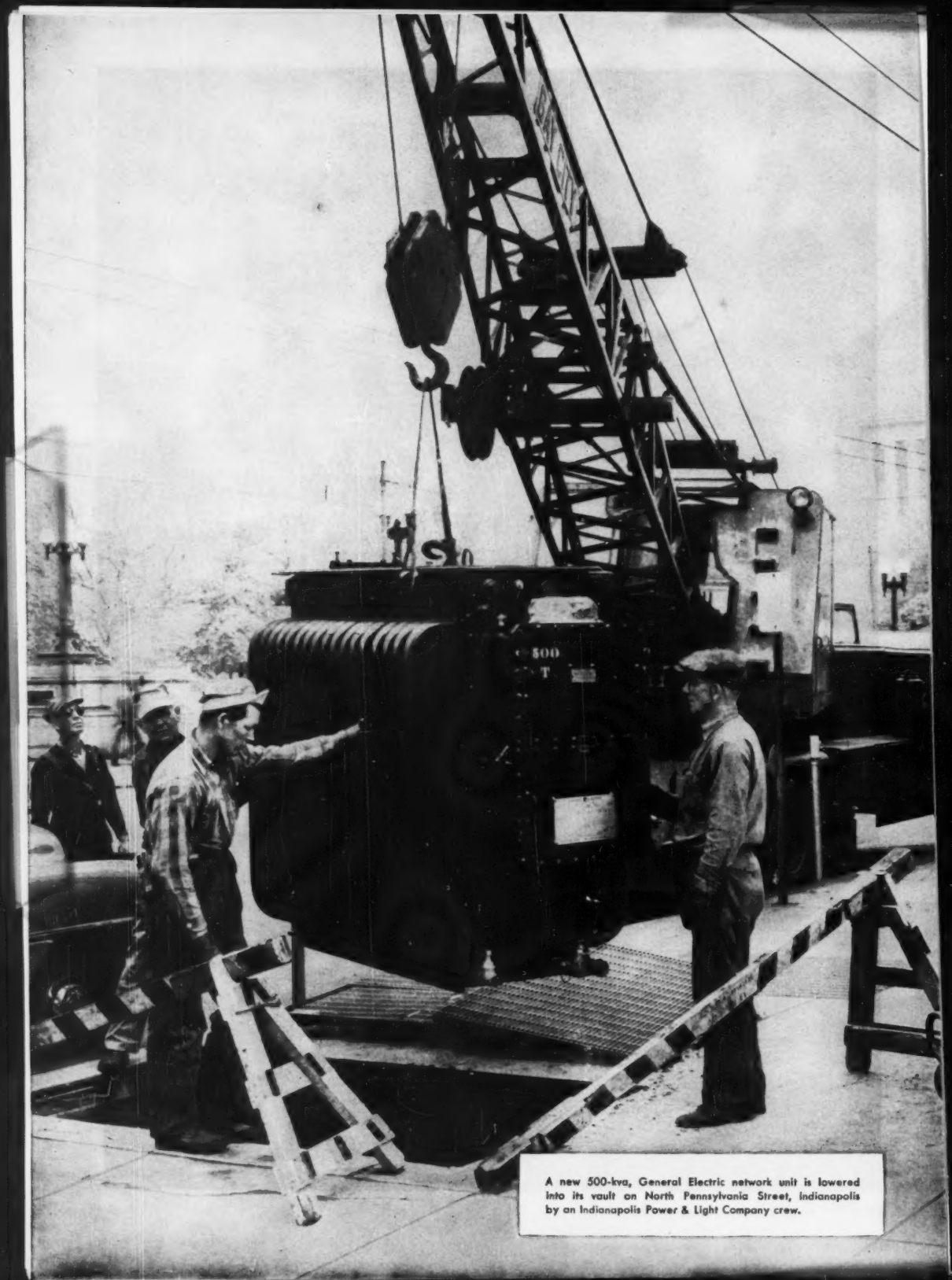
H. A. PETIT

In another appointment, Harold A. Petit was named vice president and Charleston division manager.

Costello, who has served as financial vice president and director of South Carolina E&G since 1946, started his utility career in 1919 with Metropolitan Edison Co, Reading, Pa. From 1924 to 1937 he was treas-

(*Continued on page* 27)


Merry Christmas and a
Happy New Year!
The Porcelain Insulator Corporation
PINCO
LIMA, N. Y.



A new 500-kva, General Electric network unit is lowered into its vault on North Pennsylvania Street, Indianapolis by an Indianapolis Power & Light Company crew.

Load grows in Indianapolis
...and a new G-E Network Unit goes in

It's as simple as that with a secondary network. There is little rearrangement of secondaries or service entrances with this modern distribution system.

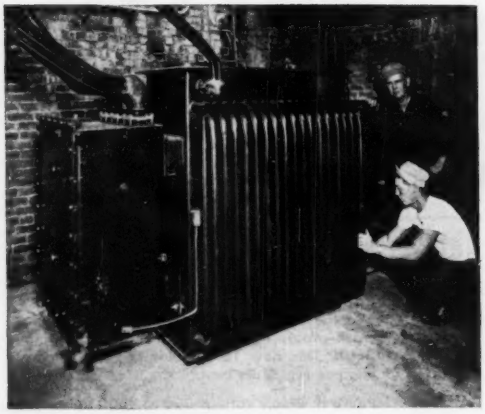
Better continuity of service is one big advantage of a secondary network. But, equally important to the utility is the elimination of headaches—and saving of rearrangement costs—as loads grow. Once a network system is installed, load growth can be taken care of by adding network units—*with seldom any other change or rearrangement required.*

This has been demonstrated in every city having such a system. Take Indianapolis, for example: Load increased greatly in the area around the post office on North Pennsylvania Street—modernization of stores, a new bank, and in general a healthy expansion of this business section.

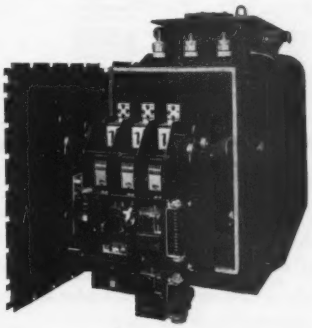
To serve this new load, the Indianapolis Power & Light Co. built a new vault and installed one 500-kva General Electric network unit.

The high-voltage feeder was already in the area—operating at 13,200 volts, it had plenty of capacity for the new load. The secondary was already in place . . . and with an established network system, the new unit was connected to this feeder and tapped in to reinforce the existing secondary grid. No redistribution of load was required, no rearrangement of service drops from one bank to another.

In every respect, with a network system, each added transformer represents an orderly step in system growth that was all provided for when the network was first engineered. For more information write for GEA-5024 and GEA-2017, *General Electric Company, Schenectady 5, New York.*



IN PLACE IN THE VAULT. This is the same unit shown on the opposite page after it was placed in the vault, and after cable connections were made. To the left is the throat-mounted General Electric network protector; at the right is the three-position disconnecting and grounding switch on the high-voltage side of the transformer.

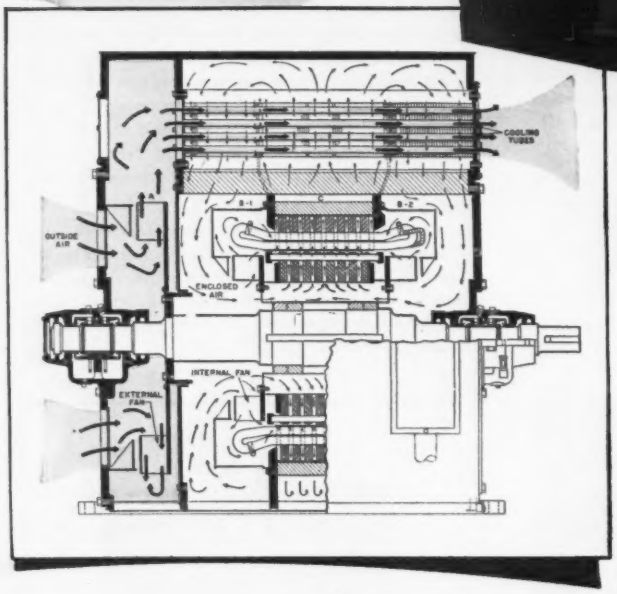


G-E NETWORK PROTECTORS ARE EASY TO INSPECT . . . EASY TO MAINTAIN. Automatic system protection on a network transformer is provided by the network protector which trips on reversal of power. When conditions are corrected, it recloses automatically. Protector case is submersible. With the door open, the protector unit can be slid out on rails for ready inspection. Dust-tight relays are of the plug-in type—can be easily removed for checking and replaced with spares.

GENERAL ELECTRIC

402-112

IT'S Heat exchanger COOLED



The NEW ELLIOTT TEFC MOTOR

A carefully designed, highly efficient fan in the external air circuit takes atmospheric air from one end of the motor, circulates it through the inside of a bank of special alloy finned tubes and discharges to atmosphere at the coupling end. Fans on each end of the rotor core circulate air within the closed internal air circuit over coils and core of motor, over finned exterior of tubes of heat exchanger (for cooling) and back to suction of fan again.

It's a simple heat exchange system — with however, certain unique advantages in the design and location of the cooling unit, the arrangement of the air circulating passages, and the housing of Elliott-fabricated steel — crack-proof, rigid, and with rust-inhibiting finish. This new TEFC motor is Elliott motor engineering at its best.

Built in 2-pole ratings 300 to 4000 hp and for lower speeds in sizes equivalent to 50 hp, 14-pole minimum, up to 3000 hp, 4-pole maximum.

WITHOUT STOPPING THE MOTOR the cooling unit can be cleaned, from the coupling end. The straight tubes can be quickly brushed out with simple brush or mechanical tube cleaner as required—a valuable feature under the conditions in which the TEFC motor is generally used.

AIR CIRCULATION IS STRONG AND POSITIVE, in the case of the enclosed air as well as of the outside cooling air.

COOLING UNIT CAN BE REMOVED for inspection, cleaning of the finned tubes, or for replacement should corrosive conditions ultimately require it.

NO INCREASE IN FOOT-TO-SHAFT DIMENSION. The cooling unit being located at the top, shaft height permits of the same easy alignment with the driven unit as in the case of a standard motor.

L-805

News About People

(*Continued from page* 22)

urer and auditor of the SCE&G. He then served as treasurer and secretary of the Virginia Public Service Co and assistant vice president in charge of operations of Virginia Electric & Power Co's Norfolk division. In 1946 he returned to South Carolina E&G as a vice president and a member of the board. He will continue in charge of the company's financial affairs and as a board member.

Petit, who started his utility career in 1917 with South Carolina Power Co, Charleston, became a railway statistician with the company in 1928. He was made a treasurer and assistant secretary of South Carolina Power in 1943. When South Carolina Power was merged with SCE&G he became assistant treasurer of the combined operations.

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J. R. Coffing, general sales manager of Coffing Hoist Co, Danville, Ill., has been elected vice president in charge of sales, advertising, and general office administration.

K. A. Cotton has resigned as supervisor of transmission and distribution operations of Pensylvania Power Co to become superintendent of electric distribution for the Warren division of Ohio Edison Co. He joined Pennsylvania Power in 1925 as a draftsman.

C. R. Gustafson has been named director of Otter Tail Power Co's newly organized farm service department. He has been county agent for West Otter Tail County, Minn, for the past five years.

W. J. Rashleigh has joined Unistrut Products Co and will serve in an executive sales capacity. During World War II, Rashleigh served as a captain in the Army Corps of Engineers. After the war he worked for Sylvania Electric Products, Inc, as California division manager and later central division manager at Chicago.

Robert W. Burnham, acting operating superintendent of the Binghamton division of New York State Electric & Gas Corp since December, 1950, has been appointed operating superintendent.

New Jersey Utility Body Elects Allen President

Howard B. Allen, vice president and general manager of New Jersey Power & Light Co, has been elected president of the New Jersey Utilities

H. B. ALLEN

Association succeeding B. L. England. Herbert E. Cliff was named vice president.

The newly elected president joined New Jersey P&L in 1934 as general manager and became vice president and general manager in 1935. Previously he worked with Westinghouse Electric Corp, Brooklyn Edison Co, and Metropolitan Edison Co.

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A. K. Neff has been appointed sales manager of Stackpole Carbon Co, St. Marys, Pa.

OBITUARY

James L. Rintoul

James L. Rintoul, 69, executive vice president of the Pennsylvania Water & Power Co until his retirement in 1947, died Nov. 25 at Baltimore, Md.

Rintoul became associated with Penn W&P in 1910 and two years later became assistant treasurer. In 1917 he was made treasurer, vice president in 1933, executive vice president and treasurer in 1940, and executive vice president in 1944. Between 1930 and 1940 he also served as treasurer of the Safe Harbor Water Power Corp.

John A. Clark, 77, former vice president of Public Service Electric & Gas Co, Newark, N. J., who retired in 1945, died Nov. 23 at East Orange. He was associated with the Essex & Hudson Gas Co, taken over by Public Service in 1903 when the parent company was formed. In 1926 he was made vice president in charge of gas operation.

James M. Armstrong, 76, former district manager of Brunswick, Ga., for Georgia Power Co, died in that city Nov. 20. With the company for 45 years, Armstrong retired several months ago.

Elmer H. Horstman, 52, chief engineer for the steam turbine section of Allis-Chalmers Manufacturing Co's power department, died Nov. 24 at North Freedom, Wis. He joined A-C in 1923 as a graduate training engineer and a year later was assigned to the firm's steam turbine department, becoming chief engineer of the section in 1948. He also served as scientific consultant for the government in Germany in 1945 and 1946 as an investigator of power plant equipment.

John F. Loderick, 65, superintendent of the Whippany generating plant Jersey Central Power & Light Co, N. J., since 1939, died at Morristown Nov. 27. Loderick started his utility career as Madison (N. J.) Borough engineer, serving from 1901 to 1914 when he became Chatham (N. J.) Borough engineer. In 1921 he joined Jersey Central as assistant engineer at the Whippany steam-electric generating plant and was made assistant chief engineer in 1930.

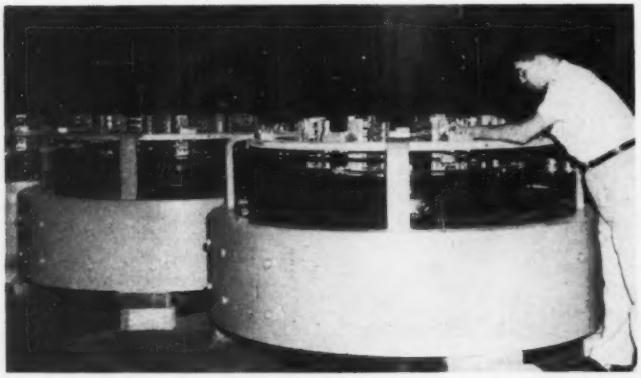
Joseph Duncan Stott, 62, structural engineer with the Shawinigan Engineering Co, Ltd, Montreal, Canada, died recently at Montreal.

Sidney E. Matthews, 61, manager of Staunton office of Virginia Electric & Power Co for 30 years, died Nov. 19 at Staunton.

George M. Smith, 64, electrical engineer with the Foster-Wheeler Corp, New York, died at Yonkers Nov. 24.

Clayton L. Powell, 64, a member of the legal department of Public Service Co of Northern Illinois, died Nov. 15.

MANUFACTURERS and MARKETS



DC GENERATORS undergo final inspection at General Electric Co's Schenectady Works before being shipped to Kaiser Aluminum & Chemical Corp's plant being built at Chalmette, La. The 1,290-kw generators are part of a group of 80 to be installed at the plant and will be used for reducing alumina into aluminum

40th Anniversary Booklet Issued by Line Material

Forty years ago two young men with $600 started the Ajax Line Material Co in Milwaukee. Today, that company, known as the Line Material Co, is an organization with nine plants. This story is presented in the current special anniversary edition of "The Inside Line," an internal organ for Line Material's 3,500 employees.

The special edition, which commemorates Line Material's 40th anniversary, appears as a 20-page, four-color insert in the November-December issue of the company's official publication, "The Line." It was originally conceived as a report to company employees, only.

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Government to Complete Laramie Alumina Plant

The government experimental alumina plant at Laramie, Wyo., will be completed and put into operation, Interior Department announced recently.

The plant is designed for recovering alumina and cement raw material from low-grade aluminous ores.

Construction of the plant was started in World War II but work was halted when the war ended. In September the Bureau of Mines took it over after it had been declared surplus by the Reconstruction Finance Corporation.

•

Babcock & Wilcox Tube Will Be Dissolved Dec. 31

The Babcock & Wilcox Tube Co, a wholly owned subsidiary of Babcock & Wilcox Co, New York, will be dissolved Dec. 31. The company's business and assets will be absorbed by the parent company and it will be operated as one of its divisions.

The recent announcement, made jointly by the boards of directors of both companies, emphasized that this transfer will have no effect upon its continued operation where customers and employees of the subsidiary are concerned. The transaction will not change the Babcock & Wilcox Co stockholders' equities.

The tube facilities will be operated as the Tubular Products Division of the company. Luke E. Sawyer and Edward A. Livingstone, Tube company officers, will become officers of Babcock & Wilcox.

In addition to its main offices at Beaver Falls, Pa., Babcock & Wilcox Tube maintains plants at Beaver Falls and Alliance, Ohio.

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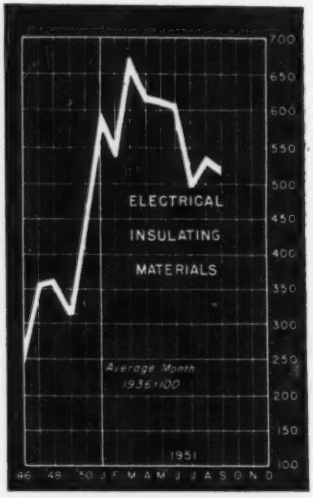
Insulating Materials Sales Decline 3% in September

Sales of electric insulating materials dropped slightly in September, falling 3% below those for August.

The index for sales billed, compiled by the National Electrical Manufacturers Association, fell to 521 compared with 539 in August. September sales were slightly higher, 1%, than those for September 1950 when the index read 514.



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Westinghouse Foundation to Award Fellowships

Between 20 and 40 fellowships, each valued at $250, have been made available to secondary school science teachers by the Westinghouse Education Foundation, which is maintained by the Westinghouse Electric Corp. The recipients will participate in a special six weeks' summer program at Carnegie Institute of Technology.

The second annual program will be-

gin June 30 and extend through Aug. 8, 1952. The program of study will stress the importance of fundamental concepts in chemistry, physics, and mathematics and will provide a survey of recent developments in the pure and applied sciences. Emphasis will be placed on teaching methods in which the Carnegie Plan of Professional Education will be featured.

During the course of study arrangements will be made for visits to Carnegie Tech's research and teaching laboratories, and to some of the many great industrial establishments of the Pittsburgh area.

MANUFACTURING BRIEFS

Westinghouse Electric Corp has received a government certificate of necessity for a fast tax write-off of the $5,668,840 it plans to spend on facilities for manufacturing electronic tubes.

Employment at the Atomic Energy Commission's Hanford Works near Richland, Wash., has reached 9,000 more than double the working force with which General Electric Co first began operation of the works for the government in 1946.

Wage increases ranging from 5 to 8¢ an hour have been granted 6,000 employees of Wagner Electric Corp, St. Louis. The boost, retroactive to Oct. 1, must be approved by the Wage Stabilization Board.

SALES ASSIGNMENTS

COMPANY STAFFS

Minneapolis-Honeywell Regulator Co has opened a new district office at Harrisburg, Pa., and has named William J. Brosch and Jack Caylor to handle sales for its Brown Instruments division. John Hopkins will handle commercial division sales and Donald Schmick heating controls division sales.

Metal Prices
Dec. 3, 1951

COPPER, Conn., V., lb	$ .24½
LEAD, N. Y., lb	.19
ZINC, prime Western, E. St. Louis, lb	.19½
TIN, Straits, qual. N. Y., lb	1.03
ALUMINUM, ingot, base price	.19
NICKEL, base price	.56½
STEEL, billets, Pitts, ton	56.00
STEEL, scrap, No. 1 heavy, Pitts., ton	45.00

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Ark., Hope—City, electric plant $3,000,000. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., consult. engr.

California—Bureau Reclamation, Dpt. Interior, P. O. Box 750. Tracy, temporary electrcial laboratory bldg., Spec. 200C-182.

Ind., Indianapolis — General Electric Supply Co., 326 W. Georgia St., warehouse and headquarters, Kentucky Ave. and Belt Railroad. $500,000.

Md., Annapolis—Pub. Wks. Office, U. S. Naval Academy, electrical transmission line for submarine test facility at Naval Engineering Experiment Station, Spec. 28519.

Md., Hagerstown—City, City Hall, electric lighting plant addns., $100,000, Albert C. Wood Assoc., Inc., 1411 Walnut St., Phila., Pa., consult. engrs.

Mich., St. Clair Shores—Ray Whyte Electrical Products Co., 15175 E. Jefferson St., Gross Point, 1 story, brick, masonry factory, Nine Mile Rd. Arthur O. A. Schmidt, 1118 Buhl Bldg., Detroit, archt.

Minnesota—Steel-Waseca Electric Cooperative, Owatonna, 18 mi. rural distr. lines, sys. imprvs., 25 mi. tie line, 16 mi. transmission lines, Steele and Waseca Counties, $365,000.

Missouri—Three Rivers Electric Cooperative, Linn, 81 mi rural distr. lines, 29 mi. new tie lines, headquarters facilities, Osage Co. $535,000. Frank Horton & Co., Lamar, consult. engrs.

Missouri—Citizens Electric Corp., 216 Merchants St., Ste. Genevieve, 42 mi. 69 KV, 1 mi. 34.5 KV wood pole transmission lines from Farmington to Perryville Proj. Mo. 58 E. Plans deposit $10, Drazen & Assoc., 8135 Forsyth Blvd., St. Louis, Zone 24, engrs.

Montana and Wyoming—Big Horn Irrigation & Power Co., Hardin, Mont., dam and power plant on Big Horn River, Big Horn, Carbon and Yellowstone Counties, Mont. and Big Horn Co., Wyo.

N. J., Vineland—Vineland Bd. Comrs., City Hall, electric power plant and railroad siding, $2,500,000. Gilbert Assocs., Inc., 412 Washington St., Reading, Pa., engr.

New Mexico—Kit Carson Electric Cooperative, Taos, 71 mi. rural distr. lines, 58 mi. tie lines and communication facilities, Taos Co. $395,000. REA allot. Tynes & Loftin, Korber Bldg., Albuquerque, N. M., consult. engrs.

N. Y., Amagansett—Pub. Wks. Office, Third Naval Dist., 90 Church St., New York, Zone 7, 75 kw. diesel driven portable power unit, appurtenances, NOY 28224, Spec. No. 29878.

North Dakota — Bureau Reclamation, Dpt. Interior, Billings, Mont., pumping units, control switchgear and switchyard equip. for Fort Clark pumping plants, Spec. 600S-79, Missouri River Basin Proj.

Oregon—Bonneville Power Admin., 827 N. E. Oregon St., Portland, clearing right of way and construct access roads 30.7 mi. for Big Eddy-Troutdale 230 kv transmission line, Inv. 6174, Wasco and Hood River Counties. Plans deposit $1.

Alaska, Kodiak—Pub. Wks. Officer, 17th Naval Dist., Box 38, Navy 127, c/o PM, Seattle, Wash., transmitter facilities, maintenance roads and antennae, taxiway extens. and road relocation at Naval Base. Plans deposit $180.

Low Bidders & Contracts Awarded

Arizona, Nevada—Howard P. Foley Co., 240 E. 1 South St., Salt Lake City, Utah, CA. $219,887, completing constr. for operations of Units A3, A4 and A9 and related switchyards, Hoover Power Plant, Boulder Canyon Proj., Spec. DC 3592. Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo. Awarded Nov. 15.

Ill., Chicago—The Austin Co., 510 N. Dearborn St., Chicago, 10, Ill., CA, $500,000 factory addn. Appleton Electric Co., 1713 W. Wellington St., Chicago, Ill. Awarded Nov. 16.

Kans., Colby—City, Gerald Hartman, mgr., Colby, Kan. Own Forces. $160,000. 1,960 hp. Fairbanks Morse & Co. engine, dual fuel and generating 1,360 KW. power plant, Ernest V. Snell, c/o owner, city engr.

Tex., Houston—Southern Builders, Inc., 1200 Givens St., Houston, Tex. Own Forces. $70,000. area electric lighting sys.

Tex., Victoria—A. H. Electric Co., 3409 Agnes St., Corpus Christi, Tex., LB $122,207, electric work on new electric power plant, some outside line work. Central Power & Light Co., 120 Chaparral St., Corpus Christi, Tex. Bids Nov. 16.

Pa., Phila.—Leonard Shaffer, 207 S. 24 St., Phila., Pa., CA. Approx. $300,000. TV station and altering radio station. Triangel Publications, Inc., 400 N. Broad St., Phila., Pa. Abraham Levy, 1411 Walnut St., Phila., Pa., archt.

Wash., Mead — Kaiser Aluminum & Chemical Co., 1924 Broadway, Oakland, Calif., Day Labor, industrial bldg., service extensions $1,000,000; exten. electric service bldg. $100,000; warehouse $75,000; storage $75,000, maintenance shop $35,000. Grand Total $1,285,000.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Conn., Newtown—State P. Wks. Co., State Office Bldg., Hartford, Hospital addn. Fairfield State Hospital, $5,000,000.

Ind., Indianapolis—Allison Div., General Motors Co., General Motors Bldg., Detroit, Mich. experimental plant, Tibbs Ave. $5,000,000.

Kan., Lawrence—Consumers Co-operative Assn., c/o H. A. Cowden, pres., 10 and Oak Sts., Kansas City 6, Mo., Farm Chemical Assn. nitrogen fertilizer plant, $16,000,000.

N. J., Trenton—Owner, c/o Dr. Louis Binder, Harlem Hospital, Leanox Ave. and 136 St., New York, N. Y. Plans by Louis Kaplan, 25 N. Montgomery Ave., 200-bed unit hospital, Parkway Ave., Ewing Twp., $3,000,000.

N. Y., Manhasset—North Shore Community Hospital, c/o Isidore Rosenfield, archt., 23 W. 47 St., New York, Zone 19 (from three low bidders), 105-bed hospital, Valley Rd. $5,000,000. Extended date.

N. Y., New York—Columbia University, 115 St. and Broadway, Zone 27, 14 story engineering center, Riverside Dr. and 125 St. $22,150,000.

O., Columbus—Don M. Castro Sr. and Don M. Castro, Jr., 145 N. High St., plans by C. Melvin Frank, 43 W. Long St., Northern Lights Shopping Center, Cleveland and Oakland Aves. $10,000,000.

Tenn., Elizabethton—City, voted bonds, paper mill for Monadnock Paper Mills, Inc. $20,000,000.

Que., Asbestos—The Canadian Johns-Manville Co. Ltd., Asbestos, defibering plant, at Shipton, $6,000,000.

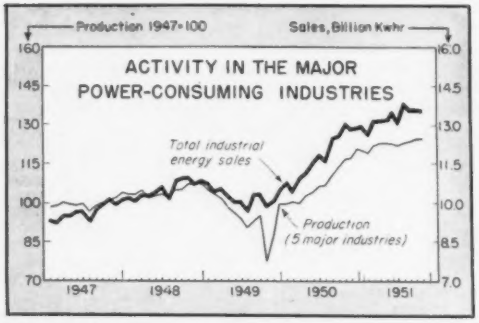
Low Bidders & Contracts Awarded

Tex., Houston—Foster Wheeler Corp., Shell Bldg., Houston, Tex., CA. $10,830,000, Benzene plant.

Tex., Houston—Procon, Inc., c/o Universal Oil Products Co., 310 S. Michigan St., Chicago, Ill., CA. Approx. $1,500,000. platforming refinery unit at Deer Park. Shell Oil Co., Shell Bldg., Houston, Tex.

Tex., Pasadena—Chemical Constr. Corp., 488 Madison Ave., New York, N. Y., CA. Approx. $12,000,000. design and construct chemical plant, near here. Heyden Chemical Corp., 393 7th Ave., New York, N. Y.

Electrical Business Outlook



PRODUCTION INDEXES crawl up slowly. To give them a sharp spurt more steel, more defense work in shops are needed

Housing Lets Down—For a While

We're coming to a period when the rate of new home completions will be lower. It probably won't be for long. But on the basis of starts in recent months, it's clear that completions will have to drop in the first half of 1952.

Homebuilders have done much better at starting new dwellings than forecasters thought they would. Credit restrictions didn't pare down the market much. And builders had enough materials on hand when 1951 began to get a lot of houses underway—despite CMP.

'51 Housing Starts Push 1950 Record

So there will be more than 1 million housing starts in 1951—as many as in any year except 1950. Completions will be even higher—close to 1.2 million. But a lot of the completions came early in this year. They were work carried over from 1950.

Builders started an unusual number of homes late last year to beat deadlines on credit and materials restrictions. There haven't been as many late starts this year. And more homes that were started have been finished.

'52 Completions Will Be Fewer

That means completions in the first part of 1952 will be well below the first half, 1951, record. Another factor will be materials shortages which are beginning to pinch homebuilders as their inventories get smaller. Not so many of the homes started from now on will be finished on schedule.

This will be important in determining the number of possible completions later in 1952. There's a good chance that Congress will ease credit restrictions before next year's elections. And that would boost starts again sometime after mid-year. But materials shortages will make it hard to get a proportionate increase in completions.

Starts would have to pick up by the third quarter of 1952 to make much difference in completions for the year. The reduced number of starts in the first half of 1952 will leave builders without too much to complete unless they begin more units in the summer months.

All this adds up to a probable downtrend in home completions through most of 1952. But it doesn't mean a really bad year in homebuilding. Completions will still look good by comparison with any recent year except 1949 or 1950.

Smaller Homes Mean Fewer Fixtures

One big question about housing in 1952 is the size of home the average builder will put up. The size and type of structure obviously affect the number of electric appliances and lighting fixtures which can be installed.

In 1951, contrary to most expectations, the average new house evidently has been made larger than in 1950. That was the case in a number of urban areas recently checked by the United States Bureau of Labor Statistics. In particular, more of the 1951 homes have large kitchen space and basement space. But 1952 may be different. Both the tighter materials situation and the credit regulations favor smaller homes.

Electric utility companies will receive the news of the slowdown in housing with both joy and sadness. The companies are having their own troubles in getting materials, especially the CMP metals. Construction of fewer homes will conserve these metals. This could result in bigger allotments for power plants now in such great demand. Fewer appliances also would be needed, resulting in another saving of materials. But the supply of appliances is adequate (EBO, Nov. 12). So more effort will have to be put into selling them in the smaller market. In addition new homes are always a welcome load to a utility. With companies adding capacity rapidly there will be no rejoicing that home construction is falling off.

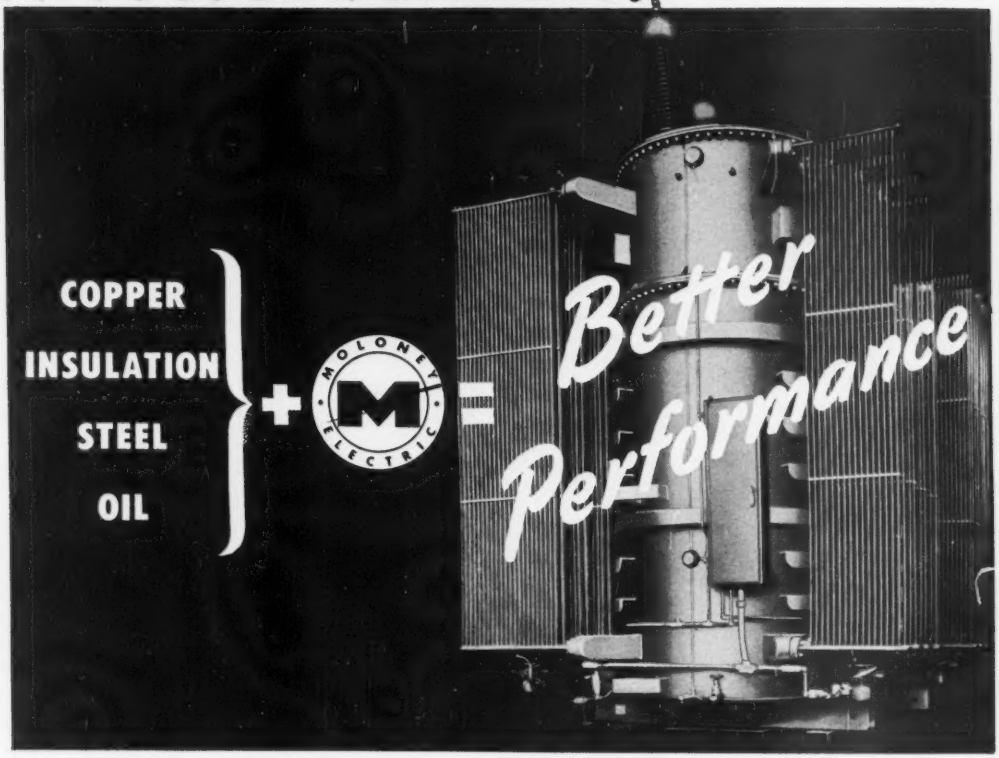
Industrial Production Rising Slowly

Industrial production still shows no sign of a rapid rise until defense work gets into higher gear.

Electrical World's index of production in five major power-consuming industries is moving ahead slowly but steadily. Currently, it is running about 4% ahead of last year. But like the Federal Reserve Board's index of industrial production, it has had its ups and downs in 1951.

The industries keeping Electrical World's index moving ahead have been chemicals, petroleum and coal products, paper and pulp. Primary metal output (iron and steel and non-ferrous metals) has not made any real gain over earlier peaks. But there's a rise coming in this category. Metal output will forge ahead as new steel capacity comes in—at a planned rate of 1 million additional tons each month.

A Proven Formula!



ALTHOUGH the same basic materials—copper, insulation, steel and oil—are used in the construction of any power transformer, the intangible "know how" is the most important factor contributing to its quality of performance. Moloney has acquired this knowledge and skill through experience in the manufacture of transformers exclusively since 1896. Engineering and manufacturing facilities are supplemented by a complete test department which includes a 3,500,000 volt surge generator. Operating records prove that you can expect *better* performance, *less* maintenance cost and *greater* reliability from Moloney Transformers.

ME51-10

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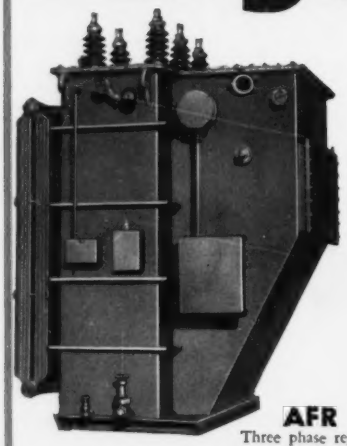
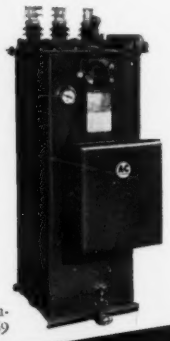
SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS, MO. AND TORONTO, ONT., CANADA

Large or Small-



DFR
Single phase regulator, sizes through 6900 v, 250 kva.



AFR
Three phase regulator, sizes through 69 kv, 2500 kva.

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JFR
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- ★ Close average voltage for all types of loads (maintained by voltage integrator)
- ★ Long life contacts of liberal design to withstand hundreds of thousands of operations
- ★ Tap changing drive mechanism with balanced spring action to eliminate shock . . . operates under oil for long trouble-free life
- ★ Unit construction to simplify maintenance

IN ADDITION to these important features, the single phase 5/8% step regulators require only 1/3 the exciting current of older types of single phase regulators. Low exciting current releases system capacity for useful loads.

You can count on Allis-Chalmers for regulation that helps boost capacity, increase revenue, and improve customer good will.

Get complete facts on Allis-Chalmers 5/8% step regulators from your nearby Allis-Chalmers district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

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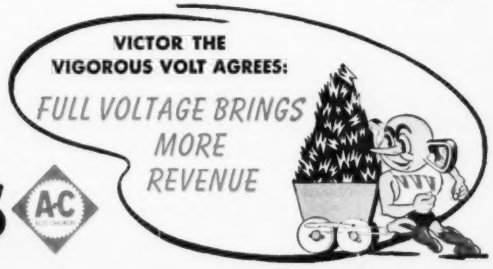

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Originators of 5/8% Step Regulation